

LITTELL'S LIVING AGE.

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A BROKEN STRING.

SING, and to you! No—no—with one note jarred
The harmony of life's long chord is broken,
Your words were light and by light lips were spoken,
And yet the music that you loved is marred.

One string, my friend, is dumb beneath your hand,
Strike and it throbs and vibrates at your will.
Falters upon the verge of sound, and still
Falls back as sea waves shattered on the strand.

Touch it no more, for you shall not regain
The sweet lost tone. Take what is left, or let
Life's music sleep to death. Let us forget
The perfect melody we seek in vain:

And yet perchance, some day before we die,
As half in dreams we hear the night wind sweep
Around our windows, when we fain would sleep,
Laden with one long sobbing moaning cry,

One faint, far tone will waken, and will rise
Above the great wave voice of mortal pain;
Hand will touch hand and lips touch lips again,
As in the darkness it recedes and dies;

Or lingering in the summer evening glow,
Then, when the passion of the crimson west
Burning like some great heart that cannot rest,
Stains as with blood the waters as they flow,

Some old forgotten tones may rise and wake
Our dying youth, and set our hearts aflame
With their old sweetness,—to our lips the name
Of love steal softly for the old love's sake.
Cornhill Magazine.

AT THE CONVENT GATE.

WISTARIA blossoms trail and fall
Above the length of barrier wall;
And softly, now and then,
The shy, staid-breasted doves will flit
From roof to gateway-top, and sit
And watch the ways of men.

The gate's ajar. If one might peep!
Ah, what a haunt of rest and sleep
The shadowy garden seems!
And note how dimly to and fro
The grave, grey-hooded sisters go,
Like figures seen in dreams.

Look, there is one that tells her beads;
And yonder one apart that reads
A tiny missal's page;
And see, beside the well, the two
That, kneeling, strive to lure anew
The magpie to its cage!

Not beautiful—not all! But each
With that mild grace, outlying speech,
Which comes of even blood;
The veil unseen that women wear
With heart-whole thought, and quiet care,
And hope of higher good.

"A placid life—a peaceful life!
What need to these the name of wife?
What gentler task (I said)—
What worthier—e'en your arts among—
Than tend the sick, and teach the young,
And give the hungry bread?"

"No worthier task!" re-echoes she,
Who (closelier clinging) turns on me
To face the road again;
And yet, in that warm heart of hers,
She means the doves', for she prefers
To "watch the ways of men."
Cornhill Magazine. AUSTIN DOBSON.

HORACE'S GHOST.

[BOOK I., ODE IX.]

HELVELLYN's height with snows is white,
The forest branches bow and splinter;
No ripple breaks the frozen lakes,
Then shut my door on cold and winter.

On my hearth-dogs pile up the logs,—
Pile high, my boy; and down your throttle
Right freely pour my "thirty-four,"
And never spare the old man's bottle.

Leave all the rest to Him who best
Knows how to still the roar of ocean;
To calm the wind in wildest mind,
And hush the leaflets lightest motion.

Fear not to stay upon the day,
And count for gain each happy pleasure;
Be not above the game of love,
And feately tread the Christmas measure.

Let blood run cold when life grows old,
Stick now to skate and tennis-racquet,
Till westward-ho the sun-wheels go,
Then join the sports of frock and jacket.

When bright eyes smile, laugh back the while,
And find the nook where beauty lingers;
Steal golden charm from rounded arm,
Half-given, half-held, by fairy fingers.
Spectator. H. C. M.

From The Edinburgh Review.

MENTAL PHYSIOLOGY.*

THE process which is adopted when an electrician transmits messages along the telegraph wire, and that which nature pursues when signals are passed through the instrumentality of nerve influence in the living animal body, are so remarkably alike that the best known of the two methods of signalling may be advantageously referred to as a first step in the explanation of the one that is less familiar and less obvious.

The electrical engineer, in his telegraph work, employs two quite distinct classes of instruments. He first stretches out long strands of iron wire for the conveyance of the message that he has to transmit, and he then contrives a battery of galvanic cells to generate the electric force that is to be sent streaming along the wires. Those stretched metal strands, as every one is aware, are kept perfectly distinct from end to end. They are either suspended in the air from insulating supports of porcelain, or they are clad in an investing sheath of electrically impervious substance, to confine the fleet messenger to its appointed path. The electric stream which travels along the wires is provided in the battery by the action upon each other of some such substances as metal, water, and acids, or salts, which produce changes of physical state amidst their own molecules when they are brought into contact, and, as a part of those changes, set free currents of force which was before employed in preserving the original state of the several constituents. The currents of the emancipated force are turned on from the battery to the wires whenever a signal or message is to be transmitted along them.

In the organized framework of the animal body, in a similar manner, isolated strands are laid down for the conveyance of

nerve influence, and batteries are provided for its production. The conveying strands are seen, when the structure of the organization is examined by curious observers, in the form of white glistening fibres or threads, which are designated "nerves." The batteries are also discoverable amidst these threads. They appear under the aspect of "tumors" or "knots" of the nerve substance, and are thence termed "ganglia." The nerve ganglia occur in considerable abundance in most parts of the body; but their favorite seats, or focal centres, are the brain, and the spinal cord which is a prolongation of the brain. The spinal cord and brain are, indeed, vast masses of nerve ganglia connected together by a tangle of threads.

The minute anatomy of this nerve-structure and brain structure of the animal body is, however, one of the most marvellous of the revelations that have been made in consequence of the discovery and employment of the microscope; the ultimate elements that are concerned are of almost inconceivable minuteness. Nerve threads may be microscopically brought within the reach of the eye which are of such exquisite fineness that fifty thousand of them can be ranged side by side within the limit of an inch. Of such fibres it would take something like one hundred and twenty millions to make up a cord of the diameter of a pencil. At the extreme ends of these minute nerve fibrils, where they are severed from each other, each fibril is moulded in the form of a round or flattened rod, which is composed of soft albuminous substance, and which is destitute in this situation of all external covering. It is simply a thread of albuminous pulp, drawn out like the threads of viscid glue which may be formed from warm gelatinous solutions. In this state it is technically called the "axis-cylinder," or core, of the nerve fibre.

When, however, several of these ultimate nerve cores are brought into close contiguity for convenience of package, they are coated over, before they are allowed to touch each other, with a mixture of albumen and fat. This coating of the nerve fibre is designated the medullary substance of Schwann, because it was first observed

* 1. *Manual of Human and Comparative Histology.* Edited by S. STRICKER. *Microscopic Anatomy of the Nervous System.* By MAX SCHULTZ. Translated by HENRY POWER, M.B. Issued by the New Sydenham Society. London: 1870.

2. *The Principles of Mental Physiology.* By WILLIAM B. CARPENTER, C.B., M.D., LL.D., F.R.S. London: 1876.

3. *The Physiology of Mind.* By HENRY MAUDSLEY, M.D. 1876.

by a distinguished German physiologist of that name. Its purpose is obviously analogous to that of the gutta-percha covering of telegraph wires destined to be buried in the earth or to be sunk in the sea. It serves to isolate each strand. After the nerve fibril has been coated by this insulating pulp, it is then further enclosed in a kind of nerve skin, or sheath, which is known as the "neurilemma." Each glistening nerve which is traced by the anatomist in the human frame is made up of a multitude of these coated and sheathed fibrils, of which every one is kept distinct and apart from the rest, from end to end. In this elaborate piece of organization, however, it must be understood that the membranous sheath and medullary coating are merely mechanical incidents of the structure; the axis-cylinder, or core, is the effective part upon which the transmission of the nerve influence depends.

The ganglionic, or force-originating portion of the apparatus, is of an altogether different character; but it is of an equally elaborate and marvellous design. It consists of globular vesicles of exquisitely filmy membrane, containing in their interior cavities a soft granular pulp of a reddish-brown tint. These vesicles are of a larger diameter than the elementary fibrils of the nerves, and, though generally of a globular outline, run out very often into angular corners or horns. At these horns the axis-cylinder, or core, of some adjacent nerve fibril is brought into close connection with the granular pulp, either by the free passage of the one into the other, or by the pressing up of the thin filmy nerve sheath of the fibril against the equally delicate membrane of the globule.

These ganglion globules of the nerve apparatus are invariably deposited within the meshes of a network of hair-fibre blood-vessels, in the midst of which they are grouped and distributed in such a way that, as the abundant blood-streams course along through the netted channels of the vessels, the globules get bathed and saturated by the streaming blood. The blood transudes through the filmy walls of its own vessels and of the ganglion globules, where these lie in close contact. The result of this drenching of the nerve glob-

ules with the blood is, that their granular pulp is continually reinvigorated and renewed. The force which they originate is extracted from the blood. The ganglion masses of the most active parts of the nervous apparatus, such as the brain, indeed receive a tenfold larger supply of blood than any other portion of the living organization of equal size; and if the flowing stream is suspended for even a passing instant, all brain power is simultaneously lost.

From all this it therefore appears that the ganglion globules of the nerve apparatus are the batteries in which nerve influence is produced, and that that nerve influence is set free as a consequence of destructive change set up in material furnished by the blood. Rich, complex food, brought to the ganglion globules by the streaming currents of the blood, is changed, in the interior of those globules, into the red granular pulp; and then the red pulp is resolved into simpler states, setting free force capable of being turned to account, and of being discharged as currents of nerve influence into the associated threads, whenever messages are required to be sent along them in the signalling service of the economy.

As in the case of the electric telegraph signalling batteries are provided at each end of the line, in order that messages may be sent in both directions, to and fro, so also there are ganglion masses at each end of the nerve threads in the animal body. Wherever impressions have to be transmitted from external regions of the body in to the central nerve masses of the frame, as in the case of the eye, the ear, and the sensitive skin which is the outer boundary of the organization, abundant ganglion globules are laid down in connection with the outer extremities of the nerve fibres. No nerve current, indeed, is possible without the presence and influence of this originating part of the apparatus. There are ganglion masses associated with the outer extremities of the nerve fibrils in all the external organs of sense. This is indicated at once by the color or tint of the nerve structure where such masses occur. The ganglionic, or originating, part is always of a grey hue on account of the pres-

ence of the red granular pulp, and of abundance of blood. The mingling of the red blood and granules with the white nerve pulp converts its whiteness into grey. The fibrous, or simply transmitting, part of the nerve structure, on the other hand, is in all cases white, and not grey, because it is destitute alike of the red blood and red granular pulp.

The nerve pulp, which is prepared out of the blood in the ganglion globules, has naturally been an object of constant curiosity to chemists. They have examined its composition very carefully in the hope that they might by that means ascertain the secret of its magical power. The result of the examination is that this pulp has been found to be composed chiefly of an albuminoid substance of a very complex nature, to which the name "protagon" has been given. So far as the analysis of this organic base of the nerve pulp has been found practicable, it has appeared that each of its molecules is built up of carbon, hydrogen, nitrogen, phosphorus, and oxygen. Two hundred and thirty-two atoms of carbon, two hundred and forty atoms of hydrogen, four atoms of nitrogen, twenty-two atoms of phosphorus, and twenty-two atoms of oxygen are contained in each ultimate molecule of the protagon. The large number of the elementary atoms that have been drawn upon for the construction of this molecule efficiently expresses the elaborate complexity of the substance, and in some measure accounts for the large store of potential, or latent, energy which it contains, and which it yields up as active and effective force when it is resolved back into its elements. Its special fitness to be so decomposed into its elements is manifested in the fact that of the five hundred and twenty atoms of which each protagon molecule is composed, four hundred and ninety-four are the fiercely combustible principles carbon, hydrogen, and phosphorus, which are at all times so ready to dissolve their state of union with other bodies, or amongst themselves, in order to combine with oxygen. The oxygen which effects the decomposition of the protagon molecules in the ganglion globules is supplied in abundance in the streaming blood. Each red cor-

puscle of the blood takes up a charge of oxygen from the breath as it passes through the air-cells of the lungs, and then delivers that over to the ganglion globules of the nerve apparatus, as it traverses the meshes of the capillary vessels. It is in this sense that the blood blows up the flames of the nervous activity, at the same time that it furnishes nourishment to the nerve substance. With each discharge of nerve force that occurs from the nerve batteries, atoms of carbon, hydrogen, and phosphorus are snatched out of the protagon of the nerve pulp by the oxygen conveyed to them by the blood corpuscles. The nerve-influence set free in the ganglion-masses is as essentially a product of the oxidation and burning of the nerve-pulp, as flame is the result of the burning of the combustible substance of a candle.

The energy generated in the ganglion globules of the nerve structure, has, for purposes of illustration, been likened to the electric force that is set free in the galvanic batteries of the electrician when messages are sent along the wires of the telegraph. It should, however, be understood that it is by no means intended to imply that nerve currents and electric currents are really identical in their nature. Electric currents are sometimes detected coursing along living nerves. Some delicate experiments made by an accomplished physiologist, M. du Bois-Reymond, established that fact. But the presence of the electric currents in those instances appears to have been of an incidental rather than of a necessary character. A series of considerations indicate that nerve influence is not electrical in the ordinary sense. The medullary substance of Schwann, which effects insulation in the axis-cylinder, or nerve core, is hardly of a character that would accomplish the purpose if electricity were concerned. And, again, the movement or propagation of the nerve influence along the nerve is a much more sluggish affair than the transmission of an electric current along a conducting line. The battery current moves through a copper wire at the rate of about thirty thousand miles a second. The nerve influence, on the other hand, runs along a nerve at the rate of two hundred feet per second. The in-

fluence which is propagated along a nerve is a change in the condition of the nerve pulp, passed on through its substance from molecule to molecule, perhaps as a vibration of the substance, perhaps as a decomposition of its particles. The nerve influence is only connected with electrical action in the sense, now pretty well understood, that all the great forces of material nature are but different forms of one common energy, and are transmutable into each other according to the exigency of the work that has to be done. The electrical agency is the form which is employed when distances of thousands of miles are concerned, or when a girdle is to be put round the earth in forty minutes. But, obviously, the same fleet messenger is hardly required to carry a message between the brain and the hand. An agency that can travel with a speed of two hundred feet in a second is amply sufficient for the transmission of signals within the narrow limits of the human frame; although, when a messenger is required to pass from the sun to the earth, an agency is selected which has the speed of one hundred and ninety millions of miles in a second.

As recently as the year 1833 a discovery in relation to nerve organization was made by Dr. Marshall Hall, which needs here to be brought under notice. He was engaged at the time in experimenting upon a water-newt, which had been killed by cutting its head off, and he was surprised to find that whenever he pricked the skin of the decapitated animal with a needle the skin shrank away from the prick, until he severed the nerves which connected the part with the spinal cord. The skin then ceased to shrink under any pricking that could be inflicted upon it. Dr. Hall hence inferred that the impression made upon the skin by the prick was first transmitted to the spinal cord, and that it was then *reflected back* from the cord to the skin in a form that was communicated to it as motion.

Dr. Hall's views of the nature of this action were published in the "Philosophical Transactions" almost immediately after the performance of his first experiment, and comprised the announcement of the discovery of what has been, since that time, termed the *reflex action of the nervous system*. This substantially means that the nerves of the animal body very generally contain within themselves a double series of fibres, the one set provided for the transmission of impressions from without in an inward direction, and the other

set for the return of a corresponding current of influence from within, and that as generally the responsive current is quite involuntarily but instantaneously sent back from the common termination of the double nerves within, whenever the current in the opposite direction has been caused. The reflected action thus produced is unmistakably an operation of life. But it is not an operation of conscious life, or even of sensation. The headless water-newt certainly knew nothing of the movement of which its skin was the seat. Its still nervously irritable organization was simply played upon by the pricks, as a musical instrument is played upon and made to give out tones by the touch of the musician's finger.*

The great vital fact to which this discovery of reflex nervous action points is, that every part of the body of a living animal which is furnished with nerves has its own proper centre of nervous life, receiving impressions from without, and responding to those impressions by an instant and quite unconscious and involuntary reply. In the lower forms of animal life, in many instances, the ganglia or nerve centres, which act in this way, are arranged in distinct groupings, or agglomerations, laid down along the entire length of the body, like the links in an extended chain. In articulated animals, such as centipedes and insects, whose bodies are made of distinct joints or segments, each segment has its own proper ganglion mass distinct from the rest, and only brought into communication with them by means of fine nerve threads that pass along from segment to segment. The individualizing of the nerve life of each separate part is so thoroughly carried out, in the case of the centipede, that if its head be cut off while it is in the act of moving along, the body continues to walk under the impressions communicated to the segmental nerve-centres from the feet. If the body be further divided into three or four parts, each part, in a similar way, continues its journey on its own account.

This faculty of unconscious and involuntary movement set up by the impact of

* This discovery of Marshall Hall's was, in some measure, foreshadowed thirteen years before by Sir Charles Bell, when he made out the distinction between the motor and sensory roots of the spinal nerves. But there was nothing in the conclusions of Sir Charles that trench upon reflex action as it is here described. He simply established the fact that afferent nerve fibres carry sense impressions in to the spinal cord and brain; and that efferent nerve fibres transmit motor influences out from the brain and spinal cord to external organs and parts. He knew nothing of the involuntary response to nerve stimulation made by the ganglion masses seated at the immediate terminations of the nerves.

mechanical impressions, which is now a well-understood and thoroughly accepted function of nerve organization, was received in the light of a dire heresy when it was first propounded by Dr. Hall. When, in the second memoir on the subject, which he communicated to the Royal Society, he described certain movements which tortoises can be caused to make after they are deprived of their heads, a derisive note was scrawled upon the paper by one of the pundits of the society, inquiring whether the turtle was also "alive after it had been converted into soup." It is a part of the history of this discovery that, in the year 1837, this second memoir was rejected by the council of the Royal Society as unworthy of acceptance.

The vital independence of the separate ganglion centres of the nervous system, manifested in this reflex action of Marshall Hall, applies quite as much in the case of the higher animals as in that of the lower forms of animal life that have been alluded to. Even in the highly developed organization of the human body, there are chains of distinct and separately acting nerve ganglia. The spinal marrow, which is so securely packed away in the interior cavity of the backbone, is indeed one prolonged row of such ganglion masses, pressed into close contiguity on account of their exceeding abundance, and sending out, at each vertebral joint of the spine, the double nerve cords which serve to transmit the nerve influence in the two directions. The ganglion masses of the spinal cord are completely invested by a thick outer layer of the nerve fibres provided for the accomplishment of the transmitting work. On this account the spinal cord, when cut across, is seen to be composed of grey nerve substance within, and of white nerve substance without.

Baron Cuvier was the first to draw attention to the service which the study of the lower forms of animal life is capable of rendering to physiological science, because it presents to the observation of the student the progressive steps of an ever-increasing complexity of organization. This sagacious naturalist was in the habit of speaking of the various tribes of animals as "experiments prepared by nature" for the instruction of physiologists as to the uses of particular parts in the elaborate organization. As new structural contrivances are added in the ascending scale, new actions and faculties appear as resultants of the addition, and in that way reveal the uses for which such particular species of structure have been designed.

Thus, in the perfect insects, which are distinguished, amongst the lowly tribes to which they are allied, by the power and energy of their muscular movements, the ganglion masses are largely increased in size in those segments of the body that are chiefly concerned in the work of locomotive progression. They are especially large in the thorax of such tribes as the dragon-flies, which have powerful wings, and of the grasshoppers, which are energetic leapers.

In insects there also appears a notable augmentation of the ganglion masses of the front segment of the trunk, or, in other words, of the head, because the organs of special sense, the eye and the antennæ, are developed in connection with that segment. The ganglion masses of that segment are also termed the "cephalic ganglia," which is simply a more technical way of saying "ganglia of the head." A still more important designation, that, namely, of "sense ganglia," or "sensorium," has also been given to them. This name very aptly and expressively intimates the all-important fact that these "head ganglia" are the immediate seat of the impressions made through the organs of sense. There is strong reason also for the further conclusion of physiologists in regard to them, that they are the seat of conscious as well as of sensory life. They not only react, by the reflex movements which they initiate, upon the outer boundaries of the organization, at which the external impressions have been primarily received, but they register those impressions upon the inner organization as feelings and conscious states. The movements, however, which are performed under their influence are not necessarily connected with any intentional effort of the will. They are, in no sense, voluntary acts. They are movements "*reflectively*" performed, with the addition of a conscious registration of the occurrence. The movements of this class, instigated through the organization of the sense ganglia, are termed "instinctive" or suggested impulses; they are impulses produced by impressions made through the organs of sense, but not reasoned out with a view to any recognized purpose or definite design. Insects, whose active and energetic lives are chiefly shaped out through the instrumentality of these sensorial ganglia, are supereminently creatures of instinct. Their organized structure is played upon by their impressions of sense. They are conscious of the mechanical or vibratory impulses communicated to their bodies; but they are inexorably

driven, as a consequence of those impressions, through an unvarying sequence of movements over which they have no power of direction or control.

The higher animals are also furnished with these sensory ganglia in a yet more advanced form of development. In the perfected nerve organization of the human being they are especially large and active. In man there are five distinct senses provided to minister to them — those, namely, of sight, hearing, taste, smell, and touch. All the nerve fibres which are concerned in the mechanism of those organs of sense, innumerable as they are, are carried in to the sensorium or sense ganglia, which are cephalic or head-contained, as in the insect. Those sense ganglia in man are deposited within the cavity of the bony skull, which serves as an efficient protection for their delicate organization. There is an opening, however, at the base of this ivory casnet, through which the nerve ganglia of the spinal marrow are brought into structural connection with this skull-defended sensorium. The face, which is planted just beneath the skull, is virtually a framework of bone adapted for the support and convenient stowage of the organs of sense that minister to the sense ganglia. The four special organs of sense — the eyes, ears, nose, and tongue — thus lie close to the ganglion-centre, which they serve.

But the brain of the most highly endowed animals, and amongst them of man, has more in it than these large sense ganglia. In the first place there is intervening between them and the nerve ganglia of the spinal marrow, and serving as a kind of link of communication between them, a lengthened mass of nerve pulp which is termed, on account of its form, the "oblong nerve marrow," or *medulla oblongata*. This lies just within the threshold of the skull, and is properly the ganglion centre, entrusted with the charge of all movements connected with breathing and swallowing. Nerve threads come to its ganglion globules from the chest and from the gullet. The movements which it controls have, however, nothing to do with consciousness or sense. They are involuntary actions which have to be performed irrespective of any influence of will, and even during the insensibility of sleep. The *medulla oblongata* and sense ganglia are, nevertheless, nearly associated together. They lie side by side upon the irregular platform which constitutes the floor of the overarching skull. They resemble the ganglion masses of the spinal marrow in the fact that they are composed

of grey nerve substance within, and of white nerve substance without.

The white nerve fibres, which are associated with the several links of the ganglion masses that have been described as running in a continuous chain through the long interior channel of the spine quite up into the cavity of the skull, are in marvellous abundance. The more vast the ganglion masses become, with advance in the type of the organization, the more copious also becomes the apparatus of transmitting threads that are associated with them. These not only pass in from the outer limits of the organization, and return back to it to establish the links of reflex connection; they also run on from ganglion to ganglion along the stretch of the spinal cord, looping and meandering about amongst the globules by the way, until a most elaborate system and service of intercommunication is established; and this service of intercommunication is so organized that the arriving impressions can, according to the special need of the case, be either arrested and turned back as reflex movements at the early stages of their ascending inward progress, or be passed on to be dealt with by higher authority in the deeper penetralia of the organization. Dr. Maudsley illustratively suggests, in reference to this point, that the various ganglion centres may be looked upon as "stations on the track through which quick trains pass without stopping, but at which other trains stop to take in passengers, and at which any train may be stopped if necessary." It is for this reason, therefore, that the long stretch of the spinal cord is covered by continuous and unbroken layers of the white fibrous nerve substance, running strand upon strand up and down, here sending fibres of communication to the grey substance within, and here transmitting the glistening threads in the opposite direction to the outlying organs.

The sensory ganglia, which are at the inner end of this nerve chain, and which are the central seat of sensation and consciousness, are not, however, the ultimate and supreme effort of nerve organization in animals. The brain, which is lodged within the ivory casnet or skull, has a much larger bulk than that which is accounted for by the presence of the sensory ganglion mass and its allied respiratory ganglia. Vast agglomerations of nerve pulp are piled up and heaped over those in the case of all the more highly endowed animals, and indeed constitute by far the larger part of the brain. On this account these

superadded masses are termed the "cerebral ganglia" or "cerebrum." The sensory and the respiratory ganglia are bound up with the larger cerebral ganglia in one common coat or investment, and are connected with them by abundant communicating fibres; but they are not essentially and structurally constituent parts of the brain. They are merely the advanced guards of the ganglion masses of the spinal cord pushed on into the skull to establish communications with the larger ganglion centres located there. The true cerebral ganglia, which are of a higher stage of development than the sensory ganglia, do not appear at all in the insects. They first present themselves, in the ascending scale of animated organization, in fishes, where they assume the form of a pair of knobs of grey nerve substance, attached like protuberances upon the sensorium. In reptiles they are a little larger than in fishes. In birds they quite cover up the ganglia connected with the nerve of smelling, and partially conceal the ganglia connected with the nerves of sight. In quadrupeds, and especially in their most sagacious families, such as the dog, they entirely cover up and hide the underlying sensorium. In man they rise in ample masses, until they fill the capacious arched dome of the skull. In the human brain they are also moulded into two lateral halves, which are divided from each other by a deep medial furrow, and on this account are spoken of as the hemispheres, or hemispherical ganglia, of the brain. Each hemisphere is also subdivided again by transverse furrows into three subordinate compartments, or "lobes." In order of progress these lobes run from before to behind. There are three pairs of ganglion masses which, on account of their very large size, are folded back over the inferior structures; the hindmost being thus also the terminal or highest pair. The posterior lobes of the brain are of a more advanced order of development than the front ones. They are not found in even such sagacious animals as elephants and dogs. These lobes are shared with man only by the monkeys.

There is one very important structural peculiarity by which the true cerebral ganglia are distinguished from all other ganglion masses, and by which they are marked out from even the sensory and respiratory ganglia, so intimately associated with them as to be contained in the same outer covering or coat. They have the grey force-originating part of their structure without, and the white fibrous

part within. When the brain is cut across, this distinctive peculiarity is immediately perceived. The core, or centre of the organ, is white; and its outer layers, or marginal part, are grey. It is as if the central fibrous parts had been lengthened out and expanded like the rays of an opened fan, and as if these expanded rays had then been thickly covered over at their ends and sides by heavy masses of ganglion globules, deposited upon them like grapes around their stalk. The object of this change in the relative position of the two distinct parts of the nerve structure is obviously to afford convenient space for the more vital and energetic elements, the ganglion globules, when they are very largely developed. In the hemispherical ganglia of the brain, the ganglion globules are clustered outside of the white fibres, for the same reason that leaves are clustered around the twigs of a tree—namely, in order that there may be ample space for a very large and abundant crop of the organs.

There is also a second reason why it is convenient that the grey nerve substance should be placed outside instead of inside in these energetic ganglia. The presence of blood is required in them in proportion to the activity of their operations. The network of capillary vessels, which furnishes the supply of blood, is therefore stretched, in the first instance, over the large outer surface of the mass, and is then thrust down in fold after fold from this broad outer surface into the interior of the substance. The widely expanded layer of the vesicular and blood-supplied pulp is, however, puckered up into sinuous convolutions, and over each convolution its own proper portion of the vascular network is spread. The immediate outer covering of the brain is thus a film of intermeshed blood-vessels, which envelopes the grey pulp everywhere, and keeps its globules saturated with permeating blood. It is by this contrivance that the very abundant and preponderant supply of blood already alluded to is secured. The blood flows into this all-embracing network by four distinct arterial trunks, which ascend into the interior of the skull through the neck. The vascular membrane itself, where it is folded round the convoluted ganglion mass, is not inappropriately termed the "kind mother," or "*pia mater*," of the brain; and it is literally and really what is implied in its name, the foster-mother of brain energy and brain strength.

The reader who has traversed the pre-

ceding pages has now reached what may be termed the inner penetralia of the subject; for it is through the instrumentality of these hemispherical masses of blood-saturated pulp, so daintily and tenderly lodged within the safe recesses of the skull, that the mere physical impressions of sense are nursed and transmitted to the faculties of the mind. That these grey and convoluted masses of nerve structure are organs of the mind is incontrovertibly proved in various ways, but in none more strikingly and emphatically than by the fact that whatever injures the healthy integrity of the convoluted pulp effectually arrests or destroys the active consciousness of the mind. When intoxicating spirit is mingled with the blood-streams, and poured with them into the capillary vessels of the brain, all consciousness, feeling, and power of thought disappear. When the flow of blood itself is mechanically stopped, as happens in faintness produced by suspending the movements of the heart, precisely the same result ensues. In persons of strong intellectual character and of great force of will, with whom reason is supreme, the brain mass is large; whilst in those in whom instinctive emotions and passions are strong, and intellectual power weak, the brain is in the same proportion small. These great convoluted brain masses, therefore, are the centres of nerve action which have been added to the animal organization, when intelligence and reason have been commissioned to bear their part in the operations of life. It does not, however, by any means follow that the high functions which they perform are conscious operations in themselves. They have to deal with the impressions of sense which have been passed on to them from the sensorium, or centre of sense reception, and their proper work is to recognize and register what is entrusted to them in the mental storehouse so as to fit them for the operations of the higher reasoning faculties. The brain-substance which accomplishes this task of transmuting the impressions of sense into ideas, nevertheless has so little trace of consciousness in itself that it cannot even feel on its own account. Its soft pulp may be roughly handled or pinched without knowing that it is touched. Even when wounded it is not aware of the injury it has received. But when its own proper work has been performed, it signals back along the connecting nerve threads to intimate the result, and the impression becomes by some mysterious and unknown process a *conscious* idea. The sensory

ganglia thus serve a double purpose, and occupy, so to speak, a midway place. They take cognizance of sensuous impressions that are sent to them from the outside world, and also of cerebral or mental states that are signalled back to them from within, besides in the first instance passing on to the cerebral ganglia the impressions of the senses.

In speaking of the conversion of the impressions of sense into ideas, the borderland, which separates the known from the unknown, is fairly entered. Some physiologists have, indeed, conceived that an idea is substantially a sense impression stamped upon the brain pulp. Others have preferred to consider an idea as a vibration of brain molecules, called up by an impression of sense. For any practical purpose it is not of material consequence whether either of these hypothetical fancies is adopted, or whether the change is summarily spoken of as a mental state. The honest and plain truth is that nothing whatever is known of the nature of the process. At this point the investigations of exact physiological science break down. It can, however, by no means be admitted that such limitation is peculiar to this branch of research. Scientific men, in sober truth, do not know more of the forces which they term gravitation, and electricity, and heat, than they know of the operations of the mind. These designations are all names that have been devised for unknown agencies, which are recognized only through the effects that they produce. Those effects are in each instance, nevertheless, examined and reasoned about, and the conditions and laws of the several agencies inferred. The metaphysical phenomena, which psychology deals with, are, at any rate, quite as tangible realities as the imponderable fluids, invisible vibrations, infinitesimal atoms, and supersubtle polarities of the physical philosophers.

There is one consideration, however, which very plainly indicates that brain structure still plays an important part in mental work, even after ideas have been formed. After the lapse of long years the ideas which have been registered in the cerebral storehouse can be reproduced at will. Memory is simply the reproductibility of ideas. The brain pulp, upon which the registration of memory is effected, is one of the most evanescent and delicate of the structures of living organization. Its ganglion globules are in a state of unceasing change. Yet the records which are made upon that soft, frail, and fleeting

material remain, although the material itself is used up and destroyed over and over again. The explanation of this marvellous result appears to be that the impression, which is first stamped upon the ganglion globules of the brain, is retained by some faculty of the intellect which is independent of physical change, although some physical changes may temporarily affect it.

Dr. Maudsley holds that there is something in the brain vesicles, over and above the part which is unceasingly changed, which constitutes a kind of enduring framework, upon which the new globules are moulded, and that the permanence of ideas and the endurance of memories are due to these undecomposable and unchangeable portions of the structure. In some recent microscopic examinations of the brains of aged men, it was noticed that at the points where the angular corners, or horns, of the ganglion corpuscles should be in free communication with the pulp core of nerve threads, the proper connection had been destroyed by the drying and withering away of the nerve threads at those points. Such impairment of structure would very amply account for the failure of memory in advanced years, since whatever the residual contents of the globules might be, they would in such circumstances of necessity be quite inaccessible for any purpose of renewed mental work. In reference to the physical state which is concerned in the production of memory, Dr. Maudsley says:—

That which has existed with any completeness in consciousness leaves behind it, after its disappearance therefrom, in the mind or brain, a functional disposition to its reproduction or reappearance in consciousness at some future time. Of no mental act can we say that it is "writ in water." Something remains from it whereby its recurrence is facilitated. Every impression of sense upon the brain, every current of molecular activity from one to another part of the brain, every cerebral reaction which passes into movement, leaves behind it some modification of the nerve-elements concerned in its function, some after-effect, or, so to speak, memory of itself in them, which renders its reproduction an easier matter, the more easy the more often it has been repeated, and makes it impossible to say that, however trivial, it shall not in some circumstances recur. Let the excitation take place in one of two nerve-cells lying side by side, and between which there was not any original specific difference, there will be ever afterwards a difference between them. This physiological process, whatever be its nature, is the physical basis of memory, and it is the foundation of the development of our mental functions.

The difficulty of apportioning out the cerebral ganglia into parts charged with the performance of particular operations of the mind has been one that has pressed heavily upon physiologists. That the brain is subdivided into subordinate organs which are distinct from each other both in structure and function, is probable in the highest degree. In some recent experiments, performed upon the lower animals whilst under the influence of anæsthetics, Dr. Ferrier was able to produce particular actions at will by passing gentle currents of electricity through different parts of the cerebral ganglia. Thus, for instance, when one definite spot in the brain convolution of a dog was acted upon, the animal wagged its tail, and when another part of the brain-mass was stimulated, it twitched its left ear, held up its head, opened its eyes, and assumed the familiar expression of fawning. In a similar way a cat was made to start up, throw back its head, open its eyes, and lash angrily with its tail. There can be no doubt that in these experiments ideas were excited in the brains of the insensible animals by the physical agency of electrical currents. The brain convolutions in reality consist of a number of distinct mind centres, spread out in a kind of vault over the subordinate centres of nerve action which have the charge of consciousness, and are arranged in layer above layer. Dr. Lockhart Clarke, as a first step towards the mapping out of the brain substance into distinguishable parts, has shown that there are at least seven concentric layers of nerve substance in the convolutions, which are alternately of darker and lighter tints; and Dr. Maudsley suggests in reference to these observations of Lockhart Clarke's that, in all probability, the superimposed strata correspond with operations of increasing complexity, the lowest layer being mainly concerned with the simpler acts of perception and memory, while the higher layers are employed in the more complicated task of converting those first rude impressions into more abstract ideas and the more finished conceptions of intellectual activity. The structure of the brain is, however, of such surpassing delicacy and such exquisite minuteness, that very little progress has yet been made in the direction of this branch of investigation, even by the highest skill of the observer and the utmost perfection of microscopes. A fragment of the grey substance of the brain, not larger than the head of a very small pin, contains parts of many thousands

of commingled globules and fibres. Of ganglion globules alone, according to the estimate of the physiologist Meynert, there cannot be less than six hundred millions in the convolutions of a human brain. They are, indeed, in such infinite numbers that possibly only a small portion of the globules provided are ever turned to account in even the most energetic brains. In one particular passage of his book Dr. Maudsley finds occasion to contrast the fifteen thousand words which Shakespeare employs for the expression of his ideas with the hundreds of millions of brain globules that must have been concerned in the production of this intellectual harvest.

Since both impressions of sense and impressions of memory are brought up to the bar of the sensorium to be dealt with upon their merits, it may very well happen that sometimes the great centre of consciousness gets sorely puzzled to discriminate between the two different classes of ideas. Many of the operations of the mind are so essentially the reproductions of impressions of sense, that in some circumstances it must be very easy to mistake them for the things which they represent. In the general work of life the power of discriminating between fancies and facts implies a complex mental act, which is only matured and perfected by long-continued training. There must consequently at all times be many people with whom this training is not complete, and who do not efficiently distinguish between sensory impressions and ideas. Such persons, accordingly, are prone to accept ideas as facts, and so receive as real whatever their imaginations suggest. They reflect their own inner life upon the outside world. Many of the motives under which people ordinarily act are, undoubtedly, of this mistaken and illusory character. In such circumstances the actions are what the physiologist terms *ideo-motor* — actions involuntarily performed under the direction of ideas. They are, indeed, essentially "*reflex actions of the brain*" — movements as involuntarily performed under the stimulation of ideas, as sneezing is involuntarily performed under a special sense impression applied through the nose. Dr. Carpenter ascribes many of the extraordinary phenomena that are met with amongst mesmerists, electro-biologists, table-turners, table-talkers, and spiritualists, to this class of involuntary cerebral actions; and the passages in which he has developed his views upon this matter are amongst the most interesting and able portions of his book. In very many instances effects of

this character are produced in persons who are intellectually weak, and who have not enough strength of character and force of purpose to retain the full command of their own mental operations. But these results are not exclusively found amongst weak people. Nothing is of more frequent occurrence in life than to meet men of highly cultivated and powerful intellects, who are misled as much as the weakest victims of mental fatuity — men who dwell in the retirement of their studies, amidst their own reveries and thoughts, and who only come out from such retirement into the world, to see there the images which have been fabricated in their own brains. With such people the unbiassed investigation of facts becomes almost an impossible process. They can see nothing but what they have already determined is to be seen.

The involuntary reflex action of the brain, and the consequent tyranny of ideas, is a very real and prominent feature in the mental and intellectual existence of man. It goes, indeed, very much further in its operation than is generally conceived. It sufficiently accounts for the vast number of individuals who claim superior and infallible insight for themselves in a sphere of existence where, nevertheless, no two are altogether agreed in their views and opinions. It is the secret of the wide sway of dogmatism. Each man, with entire conscientiousness, believes in the strength of his own position, and is as honest as he is uncompromising in his faith. He is none the less the thrall of his own ideas, and the victim of a cerebral tyranny from which there is no escape. The same influence can be traced, with scarcely less force, into the region of mental pathology. Its application to the phenomena of insanity is obvious to every one. But it is not so generally understood that much of what is familiarly termed "temper" is really to be referred to the same instrumentality. Few persons, who have intelligently observed this form of mental aberration, can have failed to notice how terribly real the illusory fancies of bad-tempered people are. They honestly believe that they are the most ill-used persons on the earth, when they are surrounded only by kindly regard and forbearing indulgence. The true explanation of this pitiable state simply is that such people are the victims of the involuntary *ideo-motor* operations of their own too active brains.

There is another side, however, of this question of reflex cerebral action, which it is more pleasant to contemplate, and in

which material amends are made for the unamiable phase of its agency. It is that which is now very expressively recognized as "unconscious cerebration." This designation refers to a remarkable faculty of the mind, which was recognized by German physiologists more promptly and readily than it was by Englishmen, although it had been in some measure noticed by Sir William Hamilton. Dr. Carpenter appears to have arrived at a knowledge of this matter by an independent line of thought, and as a consequence of the perception that the sensorium was the effective centre of consciousness for the internal senses, or ideas, as well as for the external impressions of sense. His views on the subject were distinctly expressed in the fourth edition of his book on "Human Physiology" as long back as 1852, and it certainly must be admitted that he has done more than any other English physiologist to make this particular region of mental physiology his own, and to render its doctrines intelligible to the multitude.

The unconscious cerebration of Dr. Carpenter means simply that the human brain is capable of carrying on long trains of mental operations on its own account, when it is once fairly started on the track, and of finally arriving at conclusions which can be received as conscious ideas, although there has been no consciousness whatever of the process by which the operation has been conducted. The physiological explanation of this curious power is that the convoluted ganglion masses of the brain continue their activity in working upon ideas when the functions of the sensorium, which is the seat of consciousness, are entirely suspended and in abeyance, as they are in profound sleep; or when they are exclusively occupied with other trains of impressions, and, on that account, incapable of taking sensorial note of what is passing in the brain. Dr. Carpenter's own statement of his views upon this point is contained in the following brief sentence: "Mental changes, of whose results we subsequently become conscious, may go on *below the plane* of consciousness, either during profound sleep or while the attention is wholly engrossed by some entirely different train of thought."

Dr. Maudsley remarks in reference to the same matter:—

Whatever the organic process in the brain, it takes place, like the action of other elements of the body, quite out of the reach of consciousness. We are not aware how our general and abstract ideas are formed; the due

material is consciously supplied, and there is an unconscious elaboration of the result. Mental development thus represents a sort of nutrition and organization; or, as Milton aptly says of the opinions of good men, that they are truth in the making, so we may truly say of the formation of our general and complex ideas that it is mind in the making. When the individual brain is a well-constituted one and has been duly cultivated, the results of its latent activity, rising into consciousness suddenly, sometimes seem like intuitions; they are strange and startling as the products of a dream oftentimes are, to the person who has actually produced them. Hence it was no extravagant fancy in Plato to look upon them as reminiscences of a previous higher existence. His brain was a brain of the highest order, and the results of its unconscious activity, as they flashed into consciousness, would show like revelations, and might well seem intuitions of a higher life quite beyond the reach of present will.

Whilst alluding to this remarkable power of independent and unconscious action of the brain, it should, perhaps, be observed that in reality there is no culture more rare than the one which gives men absolute control of the operations of their own minds, and the power not only of directing their trains of thought to a definite end, but also of estimating correctly the value of the conclusions that are ultimately arrived at. It is a difficult and delicate task, even for scientifically trained men, to distinguish at all times between imaginations and facts; and this difficulty is materially increased by the circumstance that so much of the results of thought lies in a debatable region where hypotheses are unavoidably mingled with facts in the most complicated and perplexing way. The practical escape from this difficulty is the habit which sound reasoners acquire of classifying their own conclusions according to the inherent and intrinsic weight of each, so that some are held loosely as mere approximations to truth, whilst others are regarded as quite settled affairs. It was this consideration, no doubt, which was present to Faraday's mind when, in one of his charming lectures at the Royal Institution, he said, "Our varying hypotheses are simply the confessions of our ignorance in a hidden form; and so it ought to be, only the ignorance should be openly acknowledged." It is a notable instance of the almost invincible power of the *ideo-motor* influence over the human mind that the practised philosopher, who had arrived at so clear a perception of this important truth, nevertheless had a rather large series of hypotheses, which he habit-

ually and avowedly excepted from his own wise canon. The same remark would apply to one of his most eminent successors in natural philosophy.

If the conclusion of the physiologists, that the presence of a convoluted brain mass of necessity indicates a power of dealing with ideas, be correct, it follows that all the lower animals which have convoluted brains are also endowed with ideas. Wherever there is clear evidence of the existence of memory, as is unquestionably the case with the horse and the dog, it certainly must be so. It is probable, however, that in the most sagacious of the four-footed and four-handed types of the animated kingdom, these mental functions are altogether of the *ideo-motor* class, and that their succession is not directed or controlled by conscious purpose and will. If this be the correct statement of the fact, the mental lives of the lower animals must be somewhat of the nature of a long reverie or dream, chequered with episodic promptings of instinct.

A noteworthy instance of a dream-life of this character, in which the reveries appeared to have taken a very mathematical line in a canine brain, was but recently familiar in the scientific circles of London. The well-known spectroscopist and astronomer, Dr. Huggins, had a four-footed friend dwelling with him for many years as a regular member of his household, who was a mastiff of very noble proportions by descent, and who bore the great name of "Kepler." This dog possessed many rare gifts, which had secured for him the admiration and regard of a large number of scientific acquaintances, and amongst these was one which he was always ready to exercise for the entertainment of visitors. At the close of luncheon or dinner, Kepler used to march gravely and sedately into the room, and set himself down at his master's feet. Dr. Huggins then propounded to him a series of arithmetical questions, which the dog invariably solved without a mistake. Square roots were extracted off-hand with the utmost readiness and promptness. If asked what was the square root of nine, Kepler replied by three barks; or, if the question were the square root of sixteen, by four. Then various questions followed, in which much more complicated processes were involved — such, for instance, as "add seven to eight, divide the sum by three, and multiply by two." To such a question as that Kepler gave more consideration, and sometimes hesitated in making up his mind as to where his barks

ought finally to stop. Still, in the end, his decision was always right. The reward for each correct answer was a piece of cake, which was held before him during the exercise; but until the solution was arrived at, Kepler never moved his eye from his master's face. The instant the last bark was given he transferred his attention to the cake.

This notable case of canine sagacity, however, in no way militates against the remarks which have recently been made in reference to the *ideo-motor* character of the quadrupedal mind. Dr. Huggins was perfectly unconscious of suggesting the proper answer to the dog, but it is beyond all question that he did so. The wonderful fact is that Kepler had acquired the habit of reading in his master's eye or countenance some indication that was not known to Dr. Huggins himself. The case was one of the class which is distinguished by physiologists as that of expectant attention. Dr. Huggins was himself engaged in working out mentally the various stages of his arithmetical processes as he propounded the numbers to Kepler, and being, therefore, aware of what the answer should be, *expected* the dog to cease barking when that number was reached; and that expectation suggested to his own brain the unconscious signal which was caught by the quick eye of the dog. The instance is strictly analogous to the well-known case in which a button, suspended from a thread and held by a finger near to the rim of a glass, strikes the hour of the day as it swings, and then stops — that is, provided the person who holds the button himself knows the hour! The explanation of this occurrence is that the hand which holds the button trembles in consequence of its constrained position, and in that way sets the button swinging; and as the attention of the experimenter is fixed upon the oscillation, in the expectation that a definite number of strokes upon the glass will occur, his own brain convolutions take care that the movements of the finger shall be in accordance with that expectation.

The mathematical training of poor Kepler has unfortunately come to an untimely end. The interesting arithmetician died of an attack of typhus fever, to the great sorrow of his large circle of friends, at the beginning of last year, and he now sleeps under the shadow of the telescopes at Tulse Hill. The memory of his high attainments and of the distinguished success with which he upheld the reputation of his name, however, remains. His most inti-

mate friends also enjoy the consolation of an excellent portrait of his thoughtful face, lit up with the exact expression which it bore when he was engaged with his arithmetical problems.

As has been already stated in an earlier paragraph, the sudden stoppage of the circulation of blood through the brain simultaneously and summarily puts an end to all manifestations of mind. This is so absolutely the case that firm mechanical pressure upon the arteries of supply instantaneously suspends all thought, feeling, and consciousness. Nature itself has, however, a more gentle way of exhibiting this crucial experiment. If the circulation of the blood through the brain is gradually reduced, instead of being summarily stopped, the same state of insensibility slowly supervenes. In other words, the animal goes to sleep. Observations made upon the lower animals show that during sleep the brain pulp becomes contracted and pale in consequence of the diminution of its current of blood; and that, with the return of the waking and conscious state, the brain pulp is again swollen out to its original dimensions, in consequence of its re-engorgement with blood. The vital current during sleep is sufficiently maintained to furnish nourishment for the repair of the exhausted brain, but it is not in sufficient force to keep up its functional activity. During any energetic exertion of the attention or will, on the other hand, exactly the opposite condition is brought about. A strong current of blood is then turned on upon the pulp of the cerebral ganglia, and is directed towards those particular parts of the structure whose functions it is intended to quicken. Physiologists conceive that the physical state upon which attention depends is simply increased force of blood thrown upon certain definite portions of the brain organization. There is, indeed, a special arrangement in the living mechanism by which diminished or increased flow can be brought about in reference to any part. The vessels which carry the supply of blood are actually diminished or enlarged according to the effect which is to be brought about. There are a series of fine nerve threads and delicate muscular bands supplied to the blood-vessels themselves to manage the proper adjustment of their dimensions according to the effect which is desired. When sleep is to be produced, the blood-vessels which proceed to the brain are narrowed by the contraction of their walls; and when the mind operations are to be aroused and set

to work the same blood-vessels are relaxed and enlarged, so that more of the blood sent out under the stroke of the heart may find its way through their channels.*

In two of the books which have been named at the head of this article, the authors have travelled over very much the same ground. In both the object has avowedly been to explain how far physiological science has advanced towards an explanation of the nature and action of mind. In both instances the task has been honestly and well performed, so well, indeed, that it quite justifies this somewhat late notice of the books. The chief difference between them, perhaps, is that the "Mental Physiology" is the more easy to read, and the more abundant and rich in its passages of illustration; whilst "The Physiology of Mind" is more technical and more physiologically profound, although not so technical or so profound as to require more effort of attention than is readily given by persons of good culture and average intelligence. Both books are the natural outgrowths of larger works conceived in earlier years, but it is one reason for the great value of the result that has been secured in both cases, that it has been reached by two entirely different lines of investigation. The authors have arrived at common ground by quite opposite routes. The "Mental Physiology" has separated itself, by the mere force of its own accumulating weight, from Dr. Carpenter's larger work upon human physiology, which still ranks as an established text-book of the subject. "The Physiology of Mind" is an offset from a book called "The Physiology and Pathology of Mind," which was also first published many years ago, and which was at that time a bold attempt to investigate some of the more obscure portions of the science of mind by means of the phenomena of insanity. The physiological branch of this treatise has, however, now grown so ripe that it has broken asunder from its pathological stem, and taken root for itself in the form in which it has recently appeared. For both books, it is not too much to say that their purpose has been amply and ably worked out. In both, clear forcible language is used in the con-

* The contraction of the smaller arterial vessels is effected through the influence of nerves supplied from the distinct sympathetic nerve system of organic life, which has its chief centres in the visceral plexuses, and not in the spinal cord and brain. But their dilatation is produced by the operation of other nerve threads derived from the system of the spinal cord. The power of mental action over the dilatation of the small blood-vessels is manifested in the familiar occurrence of blushing under emotion.

struction of the argument, and in both a very complete impression is ultimately given of the existing state of this branch of physiological knowledge.

The great facts relating to the physiology of mind, which have been definitely established by the recent progress of scientific discovery, may be briefly expressed in the following condensed propositions.

With every expression of a mental state, and with every action of the mind, some structural change occurs in the substance of the brain. It is in that sense that the brain is the organ of the mind.

The change which occurs in the brain is of a destructive character. A complex unstable substance, formed out of the blood and deposited in the brain globules, is decomposed and destroyed by the agency of oxygen. The nerve influence and mind action are energies evolved as a consequence of that decomposition. The brain pulp is burned for the production of brain force.

The combustible brain pulp is deposited in minute membranous sacs, or globules, to which an abundant network of blood-vessels is distributed. Through these blood-vessels both the oxygen, which is the agent effecting the corrosive decomposition of the pulp, and the nourishment which repairs the corrosive destruction, are conveyed to the brain. The blood circulation both wastes and sustains the brain, and in that way promotes its mental functions.

The globules of the brain are produced in quite incalculable numbers, and are in a state of continuous reproduction, growth, maturation, and decay. The cerebral globules are essentially living organs, which build up the structure of the brain by the multiplication of their own minute forms. The transmission of nerve influence and mind-force between the several aggregations of globules, and between globule and globule, is effected by means of a destructive decomposition of the pulp of the nerve threads which meander about amongst them in all conceivable directions. With every effective current of nerve influence there is a concomitant consumption of nerve pulp. Nerve substance is destroyed by the transmission of nerve influence, as well as by the origination of mental activity.

Different kinds of globules, and different methods of distribution and grouping of their clusters, are distinguished in the brain. But on account of the surpassing minuteness and delicacy of the structure, and the intricacy of its arrangement, it has not yet been possible to map out the dif-

ferent parts of the convolutions of the brain into subordinate divisions corresponding with the different faculties of the mind.

Such are the results which science has attained in this recondite province of intellectual inquiry, but with these results the achievements of physiological investigation end. There is no glimmering yet of the way in which the energy evolved from the destruction of the sensory track of the brain pulp is changed into the phenomena of consciousness. There is no hint of the plan by which the action of the unstable and combustible base of the brain convolutions is transmuted into the functions of the intellect. There is no explanation of the process by which pulp vibration is transformed into reason and feeling. There is no demonstration of the structural difference between pleasure and pain. An unfathomed abyss still stretches out beyond the most advanced ground won by the adventurous explorations of physiologists. Dr. Maudsley, as the expositor of the latest progress in mental physiology, honestly and unreservedly admits that this is the case when he says:—

Of what may happen in a world into which human senses have not yet found a means of entering, we are no better entitled to speak than the blind man is to talk of the appearance of objects. In such matter it would be more wise to adopt Tertullian's maxim, "*Credo quia impossibile est*," than that too much favored by human ignorance which affirms "that a thing is impossible because it appears to be inconceivable."

Here, then, we reach the limits to which physical science has attained. The moral and intellectual faculties of man belong to a region for which physical science has no language and no explanation. To investigate them is the task of a higher branch of philosophy, for we still say with the old schoolmen, "*Nihil est in intellectu quod non fuerit in sensu — nisi intellectus ipse*."

SIR GIBBIE.

BY GEORGE MACDONALD.
AUTHOR OF "MALCOLM," "THE MARQUIS OF LOSSIE,"
ETC.

CHAPTER XI.

THE HOUSELESS.

THE minister kept Gibbie hard at work, and by the time Donal's last winter came, Gibbie was ready for college also. To

please Mr. Sclater he *competed* for a bursary, and gained a tolerably good one, but declined accepting it. His guardian was annoyed, he could not see why he should refuse what he had "earned." Gibbie asked him whether it was the design of the founders of those bursaries that rich boys should have them. Were they not for the like of Donal? Whereupon Mr. Sclater could not help remembering what a difference it would have made to him in his early struggles, if some rich bursar above him had yielded a place — and held his peace.

Daur Street being too far from Elphinstone College for a student to live there, Mr. Sclater consented to Gibbie's lodging with Donal, but would have insisted on their taking rooms in some part of the town — more suitable to the young baronet's position, he said; but as there was another room to be had at Mistress Murkison's, Gibbie insisted that one who had shown them so much kindness must not be forsaken; and by this time he seldom found difficulty in having his way with his guardian. Both he and his wife had come to understand him better, and nobody could understand Gibbie better without also understanding better all that was good and true and right: although they hardly knew the fact themselves, the standard of both of them had been heightened by not a few degrees since Gibbie came to them; and although he soon ceased to take direct notice of what in their conduct distressed him, I cannot help thinking it was not amiss that he uttered himself as he did at the first; knowing a little his ways of thinking, they came to feel his judgment unexpressed. For Mrs. Sclater, when she bethought herself that she had said or done something he must count worldly, the very silence of the dumb boy was a reproof to her.

One night the youths had been out for a long walk, and came back to the city late, after the shops were shut. Only here and there a light glimmered in some low-browed little place, probably used in part by the family. Not a soul was visible in the dingy region through which they now approached their lodging, when round a corner, moving like a shadow, came, soft-pacing, a ghostly woman in rags, with a white, worn face, and the largest black eyes, it seemed to the youths, that they had ever seen — an apparition of awe and grief and wonder. To compare a great thing to a small, she was to their eyes as a ruined, desecrated shrine to the eyes of the saint's own peculiar worshipper. I may compare

her to what I please, great or small — to a sapphire set in tin, to an angel with draggled feathers; for far beyond all comparison is that temple of the holy ghost in the desert — a woman in wretchedness and rags. She carried her puny baby rolled hard in the corner of her scrap of black shawl. To the youths a sea of trouble looked out of those wild eyes. As she drew near them, she hesitated, half stopped, and put out a hand from under the shawl — stretched out no arm, held out only a hand from the wrist, white against the night. Donal had no money. Gibbie had a shilling. The hand closed upon it, a gleam crossed the sad face, and a murmur of thanks fluttered from the thin lips as she walked on her way. The youths breathed deep, and felt a little relieved, but only a little. The thought of the woman wandering in the dark and the fog and the night, was a sickness at their hearts. Was it impossible to gather such under the wings of any night-brooding hen? That Gibbie had gone through so much of the same kind of thing himself, and had found it endurable enough, did not make her case a whit the less pitiful in his eyes, and indeed it was widely, sadly different from his. Along the deserted street, which looked to Donal like a waterless canal banked by mounds of death, and lighted by phosphorescent grave-dumps, they followed her with their eyes, the one living thing, fading away from lamp to lamp; and when they could see her no farther, followed her with their feet; they could not bear to lose sight of her. But they kept just on the verge of vision, for they did not want her to know the espal of their love. Suddenly she disappeared, and keeping their eyes on the spot as well as they could, they found when they reached it a little shop, with a red curtain, half torn down, across the glass door of it. A dim oil lamp was burning within. It looked like a rag-shop, dirty and dreadful. There she stood, while a woman with a bloated face, looking to Donal like a feeder of hell-swine, took from some secret hole underneath, a bottle which seemed to Gibbie the very one his father used to drink from. He would have rushed in and dashed it from her hand, but Donal withheld him.

"Hoots!" he said, "we canna follow her a' nicht; an' gien we did, what better wad she be i' the mornin'? Lat her be, puir thing!"

She received the whisky in a broken tea-cup, swallowed some of it eagerly, then, to the horror of the youths, put some of

it into the mouth of her child from her own. Draining the last drops from the cup, she set it quietly down, turned, and without a word spoken, for she had paid beforehand, came out, her face looking just as white and thin as before, but having another expression in the eyes of it. At the sight, Donal's wisdom forsook him.

"Eh, wuman," he cried, "yon wasna what ye hed the shillin' for!"

"Ye said naething," answered the poor creature humbly, and walked on, hanging her head, and pressing her baby to her bosom.

The boys looked at each other.

"That wasna the gait yer shillin' sud hae gane, Gibbie," said Donal. "It's clear it winna dee to gie shillin's to sic like as her. Wha kens but the henger an' the caul, an' the want o' whisky may be the wuman's evil things here, 'at she may 'scape the hell fire o' the Rich Man hereafter?"

He stopped, for Gibbie was weeping. The woman and her child he would have taken to his very heart, and could do nothing for them. Love seemed helpless, for money was useless. It set him thinking much, and the result appeared. From that hour the case of the homeless haunted his heart and brain and imagination; and as his natural affections found themselves repelled and chilled in what is called Society, they took refuge more and more with the houseless and hungry and shivering. Through them, also, he now, for the first time, began to find grave and troubling questions mingling with his faith and hope; so that already he began to be rewarded for his love: to the true heart every doubt is a door. I will not follow and describe the opening of these doors to Gibbie, but, as what he discovered found always its first utterance in action, wait until I can show the result.

For the time the youths were again a little relieved about the woman: following her still, to a yet more wretched part of the city, they saw her knock at a door, pay something, and be admitted. It looked a dreadful refuge, but she was at least under cover, and shelter, in such a climate as ours in winter, must be the first rudimentary notion of salvation. No longer haunted with the idea of her wandering all night about the comfortless streets, "like a ghost awake in Memphis," Donal said, they went home. But it was long before they got to sleep, and in the morning their first words were about the woman.

"Gien only we hed my mither here!" said Donal.

"Mightn't you try Mr. Sclater?" suggested Gibbie.

Donal answered with a great roar of laughter.

"He wad tell her she oucht to tak shame till herself," he said, "an I'm thinkin' she's lang brunt a' her stock o' that firin'. He wad tell her she sud work for her livin', an maybe there isna ae turn the puir thing can dee 'at onybody wad gie her a bawbee for a day o'? — But what say ye to takin' advice o' Miss Galbraith?"

It was strange how, with the marked distinctions between them, Donal and Gibbie would every now and then, like the daughters of the Vicar of Wakefield, seem to change places and parts.

"God can make praise-pipes of babes and sucklings," answered Gibbie; "but it does not follow that they can give advice. Don't you remember your mother saying that the stripling David was enough to kill a braggart giant, but a sore-tried man was wanted to rule the people?"

It ended in their going to Mistress Croale. They did not lay bare to her their perplexities, but they asked her to find out who the woman was, and see if anything could be done for her. They said to themselves she would know the condition of such a woman, and what would be moving in her mind, after the experience she had herself had, better at least than the minister or his lady-wife. Nor were they disappointed. To be thus taken into counsel revived for Mistress Croale the time of her dignity while yet she shepherded her little flock of drunkards. She undertook the task with hearty good will, and carried it out with some success. Its reaction on herself to her own good was remarkable. There can be no better auxiliary against our own sins than to help our neighbor in the encounter with his. Merely to contemplate our neighbor will recoil upon us in quite another way: we shall see his faults so black, that we will not consent to believe ours so bad, and will immediately begin to excuse, which is the same as to cherish them, instead of casting them from us with abhorrence.

One day early in the session, as the youths were approaching the gate of Miss Kimble's school, a thin, care-worn man, in shabby clothes, came out, and walked along meeting them. Every now and then he bowed his shoulders, as if something invisible had leaped upon them from behind, and as often seemed to throw it off and with effort walk erect. It was the laird. They lifted their caps, but in return he only stared, or rather tried to stare, for his

eyes seemed able to fix themselves on nothing. He was now at length a thoroughly ruined man, and had come to the city to end his days in a cottage belonging to his daughter. Already Mr. Sclater, who was unweariedly on the watch over the material interests of his ward, had, through his lawyer, and without permitting his name to appear, purchased the whole of the Glashruach property. For the present, however, he kept Sir Gilbert in ignorance of the fact.

CHAPTER XII.

A WALK.

THE cottage to which Mr. Galbraith had taken Ginevra, stood in a suburban street—one of those small, well-built stone houses common, I fancy, throughout Scotland, with three rooms and a kitchen on its one floor, and a large attic with dormer windows. It was low and wide-roofed and had a tiny garden between it and the quiet street. This garden was full of flowers in summer and autumn, but the tops of a few gaunt stems of hollyhocks, and the wiry straggling creepers of the honeysuckle about the eaves, was all that now showed from the pavement. It had a dwarf wall of granite, with an iron railing on the top, through which, in the season, its glorious colors used to attract many eyes, but Mr. Galbraith had had the railing and the gate lined to the very spikes with boards: the first day of his abode he had discovered that the passers-by—not to say those who stood to stare admiringly at the flowers, came much too near his faded but none the less conscious dignity. He had also put a lock on the gate, and so made of the garden a sort of propylon to the house. For he had of late developed a tendency towards taking to earth, like the creatures that seem to have been created ashamed of themselves, and are always burrowing. But it was not that the late laird was ashamed of himself in any proper sense. Of the dishonesty of his doings he was as yet scarcely half conscious, for the proud man shrinks from repentance, regarding it as disgrace. To wash is to acknowledge the need of washing. He avoided the eyes of men for the mean reason that he could no longer appear in dignity as laird of Glashruach and chairman of a grand company; while he felt as if something must have gone wrong with the laws of nature that it had become possible for Thomas Galbraith, of Glashruach, Esq. to live in a dumpy cottage. He had thought seriously of resuming his patronymic of

Durrant, but reflected that he was too well known to don that cloak of transparent darkness without giving currency to the idea that he had soiled the other past longer wearing. It would be imagined, he said, picking out one dishonesty of which he had not been guilty, that he had settled money on his wife, and retired to enjoy it.

His condition was far more pitiful than his situation. Having no faculty for mental occupation except with affairs, finding nothing to do but cleave, like a spent sailor, with hands and feet to the slippery rock of what was once his rectitude, such as it was, trying to hold it still his own, he would sit for hours without moving—a perfect creature, temple, god, and worshipper, all in one—only that the worshipper was hardly content with his god, and that a worm was gnawing on at the foundation of the temple. Nearly as motionless, her hands excepted, would Ginevra sit opposite to him, not quieter but more peaceful than when a girl, partly because now she was less afraid of him. He called her, in his thoughts as he sat there, heartless and cold, but not only was she not so, but it was his fault that she appeared to him such. In his moral stupidity he would rather have seen her manifest concern at the poverty to which he had reduced her, than show the stillness of a contented mind. She was not much given to books, but what she read was worth reading, and such as turned into thought while she sat. They are not the best students who are most dependent on books. What can be got out of them is at best only material: a man must build his house for himself. She would have read more, but with her father beside her doing nothing, she felt that to take a book would be like going into a warm house, and leaving him out in the cold. It was very sad to her to see him thus shrunk and withered, and lost in thought that plainly was not thinking. Nothing interested him; he never looked at the papers, never cared to hear a word of news. His eyes more unsteady, his lips looser, his neck thinner and longer, he looked more than ever like a puppet whose strings hung slack. How often would Ginevra have cast herself on his bosom if she could have even hoped he would not repel her! Now and then his eyes did wander to her in a dazed sort of animal-like appeal, but the moment she attempted response, he turned into a corpse. Still, when it came, that look was a comfort, for it seemed to witness some bond between them after all. And another comfort was,

that now, in his misery, she was able, if not to forget those painful thoughts about him which had all these years haunted her, at least to dismiss them when they came, in the hope that, as already such a change had passed upon him, further and better change might follow.

She was still the same brown bird as of old — a bird of the twilight, or rather a twilight itself, with a whole night of stars behind it, of whose existence she scarcely knew, having but just started on the voyage of discovery which life is. She had the sweetest, rarest smile — not frequent and flashing like Gibbie's, but stealing up from below, like the shadowy reflection of a greater light, gently deepening, permeating her countenance until it reached her eyes, thence issuing in soft flame. Always, however, as soon as her eyes began to glow duskily, down went their lids, and down dropt her head like the frond of a sensitive plant. Her atmosphere was an embodied stillness; she made a quiet wherever she entered; she was not beautiful, but she was lovely; and her presence at once made a place such as one would desire to be in.

The most pleasant of her thoughts were of necessity those with which the two youths were associated. How dreary but for them and theirs would the retrospect of her life have been! Several times every winter they had met at the minister's, and every summer she had again and again seen Gibbie with Mrs. Sclater, and once or twice had had a walk with them, and every time Gibbie had something of Donal's to give her. Twice Gibbie had gone to see her at the school, but the second time she asked him not to come again, as Miss Kimble did not like it. He gave a big stare of wonder, and thought of Angus and the laird; but followed the stare with a swift smile, for he saw she was troubled, and asked no question, but waited for the understanding of all things that must come. But now, when or where was she ever to see them more? Gibbie was no longer at the minister's and perhaps she would never be invited to meet them there again. She dared not ask Donal to call: her father would be indignant; and for her father's sake she would not ask Gibbie: it might give him pain; while the thought that he would of a certainty behave so differently to him now that he was well-dressed, and mannered like a gentleman, was almost more unendurable to her than the memory of his past treatment of him.

Mr. and Mrs. Sclater had called upon them the moment they were settled in the

cottage; but Mr. Galbraith would see nobody. When the gate-bell rang, he always looked out, and if a visitor appeared, withdrew to his bedroom.

One brilliant Saturday morning, the second in the session, the ground hard with an early frost, the filmy ice making fairy caverns and grottos in the cart-ruts, and the air so condensed with cold that every breath, to those who ate and slept well, had the life of two, Mrs. Sclater rang the said bell. Mr. Galbraith peeping from the window, saw a lady's bonnet, and went. She walked in, followed by Gibbie, and would have Ginevra go with them for a long walk. Pleased enough with the proposal, for the outsides of life had been dull as well as painful of late, she went and asked her father. If she did not tell him that Sir Gilbert was with Mrs. Sclater, perhaps she ought to have told him; but I am not sure, and therefore am not going to blame her. When parents are not fathers and mothers, but something that has no name in the kingdom of heaven, they place the purest and most honest of daughters in the midst of perplexities.

"Why do you ask me?" returned her father. "My wishes are nothing to any one now; to you they never were anything."

"I will stay at home, if you wish it, papa, — with pleasure," she replied, as cheerfully as she could after such a reproach.

"By no means. If you do, I shall go and dine at the Red Hart," he answered — not having money enough in his possession to pay for a dinner there.

I fancy he meant to be kind, but, like not a few, alas! took no pains to look as kind as he was. There are many, however, who seem to delight in planting a sting where conscience or heart will not let them deny. It made her miserable for a while of course, but she had got so used to his way of breaking a gift as he handed it, that she answered only with a sigh. When she was a child, his ungraciousness had power to darken the sunlight, but by repetition it had lost force. In haste she put on her little brown-ribboned bonnet, took the moth-eaten muff that had been her mother's, and rejoined Mrs. Sclater and Gibbie, beaming with troubled pleasure. Life in her was strong, and their society soon enabled her to forget, not her father's sadness, but his treatment of her.

At the end of the street, they found Donal waiting them — without greatcoat or muffler, the picture of such health as

suffices to its own warmth, not a mark of the midnight student about him, and looking very different, in town-made clothes, from the Donal of the mirror. He approached and saluted her with such an air of homely grace as one might imagine that of the Red Cross Knight, when, having just put on the armor of a Christian man, from a clownish fellow he straightway appeared the goodliest knight in the company. Away they walked together westward, then turned southward. Mrs. Sclater and Gibbie led, and Ginevra followed with Donal. And they had not walked far, before something of the delight of old times on Glashruach began to revive in the bosom of the too sober girl. In vain she reminded herself that her father sat miserable at home, thinking of her probably as the most heartless of girls; the sun, and the bright air like wine in her veins, were too much for her, Donal had soon made her cheerful, and now and then she answered his talk with even a little flash of merriment. They crossed the bridge, high-hung over the Daur, by which on that black morning Gibbie fled; and here for the first time, with his three friends about him, he told on his fingers the dire deed of the night, and heard from Mrs. Sclater that the murderers had been hanged. Ginevra grew white and faint as she read his fingers and gestures, but it was more at the thought of what the child had come through, than from the horror of his narrative. They then turned eastward to the sea, and came to the top of the rock-border of the coast, with its cliffs rent into gullies, eerie places to look down into, ending in caverns into which the waves rushed with bellow and boom. Although so nigh the city, this was always a solitary place, yet, rounding a rock, they came upon a young man, who hurried a book into his pocket, and would have gone by the other side, but perceiving himself recognized, came to meet them, and saluted Mrs. Sclater, who presented him to Ginevra as the Rev. Mr. Duff.

"I have not had the pleasure of seeing you since you were quite a little girl, Miss Galbraith," said Fergus.

Ginevra said coldly she did not remember him. The youths greeted him in careless student fashion: they had met now and then for a moment about the college; and a little meaningless talk followed.

He was to preach the next day — and for several Sundays following — at a certain large church in the city, at the time without a minister; and when they came upon him he was studying his sermon — I

do not mean the truths he intended to press upon his audience — those he had mastered long ago — but his manuscript, *studying* it in the sense in which actors use the word, learning it, that is, by heart laboriously, that the words might come from his lips an extemporaneous utterance, much like what they were not as possible, consistently with not being mistaken for one, which, were it true as the Bible, would have no merit in the ears of those who counted themselves judges of the craft. The kind of thing suited Fergus, whose highest idea of life was *seeming*. Naturally capable, he had already made of himself rather a dull fellow; for when a man spends his energy on appearing to have, he is all the time destroying what he has, and therein the very means of becoming what he desires to seem. If he gains his end his success is his punishment.

Fergus never forgot that he was a clergyman, always carrying himself according to his idea of the calling; therefore when the interchange of commonplaces flagged, he began to look about him for some remark sufficiently tinged with his profession to be suitable for him to make, and for the ladies to hear as his. The wind was a thoroughly wintry one from the northeast, and had been blowing all night, so that the waves were shouldering the rocks with huge assault. Now Fergus's sermon, which he meant to use as a spade for the casting of the first turf of the first parallel in the siege of the pulpit of the North parish, was upon the vanity of human ambition, his text being the grand verse — *And so I saw the wicked buried, who had come and gone from the place of the holy*; there was no small amount of fine writing in the manuscript he had thrust into his pocket; and his sermon was in his head when he remarked, with the wafure of a neatly gloved hand seawards —

"I was watching these waves when you found me: they seem to me such a picture of the vanity of human endeavor! But just as little as those waves would mind me, if I told them they were wasting their labor on these rocks, will men mind me, when I tell them to-morrow of the emptiness of their ambitions."

"A present enstance o' the vanity o' human endeevour!" said Donal. "What for sud ye, in that case, gang on preachin', settin' them an ill exmple?"

Duff gave him a high-lidded glance, vouchsafing no reply.

"Just as those waves," he continued, "waste themselves in effort, as often foiled as renewed, to tear down these rocks,

so do the men of this world go on and on, spending their strength for naught."

"Hoots, Fergus!" said Donal again, in broadest speech, as if with its bray he would rebuke not the madness but the silliness of the prophet, "ye dinna mean to tell me yon jaws (*billows*) disna ken their business better nor imagine they hae to caw doon the rocks?"

Duff cast a second glance of scorn at what he took for the prosaic stupidity or poverty-stricken logomachy of Donal, while Ginevra opened on him big brown eyes, as much as to say, "Donal, who was it set me down for saying a man couldn't be a burn?" But Gibbie's face was expectant: he knew Donal. Mrs. Sclater also looked interested: she did not much like Duff, and by this time she suspected Donal of genius. Donal turned to Ginevra with a smile, and said, in the best English he could command—

"Bear with me a moment, Miss Galbraith. If Mr. Duff will oblige me by answering my question, I trust I shall satisfy you I am no turncoat."

Fergus stared. What did his father's herd-boy mean by talking such English to the ladies, and such vulgar Scotch to him? Although now a magistrand—that is, one about to take his degree of Master of Arts—Donal was still to Fergus the cleaner-out of his father's byres—an upstart, whose former position was his real one—towards him at least, who knew him. And did the fellow challenge him to a discussion? Or did he presume on the familiarity of their boyhood, and wish to sport his acquaintance with the popular preacher? On either supposition, he was impertinent. "I spoke poetically," he said with cold dignity.

"Ye'll excuse me, Fergus," replied Donal, "—for the sake o' auld langsyne, when I was, as I ever will be, sair obligatit till ye—but i' that ye say noo, ye're sair wrang: ye wasna speykin' poetically, though I ken weel ye think it, or ye wadna say 't; an' that's what garred me tak ye up. For the verra essence o' poetry is trowth, an' as sune's a word's no true, it's no poetry, though it may hae on the cast claes o' 't. It's nane but them 'at kens na what poetry is, 'at blethers aboot poetic license, an' that kin' o' hen-scratch, as gien a poet was sic a gowk 'at naeboddy heedit hoo he lee'd, or whether he gaed wi' 's cwite (*coat*) hin' side afore or no."

"I am at a loss to understand you—Donal?—yes, Donal Grant. I remember you very well; and from the trouble I used to take with you to make you distinguish

between the work of the poet and that of the rhymester, I should have thought by this time you would have known a little more about the nature of poetry. Personification is a figure of speech in constant use by all poets."

"Ow ay! but there's true and there's fause personification: an' it's no ilka poet 'at kens the differ. Ow, I ken! ye'll be doon upo' me wi' yer Byron,"—Fergus shook his head as at a false impeachment, but Donal went on—"but even a poet canna mak lees poetry. An' a man 'at in ane o' his gran'est verses cud haiver aboot the birth o' a yoong airthquake—losh! to think o' 't growin' an' auld airthquake!—haith, to me it's no up till a deuk-quack!—sic a poet micht weel, I grant ye, be he ever sic a guid poet whan he tuik heed to what he said, he micht weel, I say, blether nonsense aboot the sea warrin' again' the rocks, an' sic stuff."

"But don't you see them?" said Fergus, pointing to a great billow that fell back at the moment, and lay churning in the gulf beneath them. "Are they not in fact wasting the rocks away by slow degrees?"

"What comes o' yer simile than, anent the vanity o' their endeavour? But that's no what I'm carin' aboot. What I maintain is, 'at though they div weir awa' the rocks, that's nae mair their design nor it's the design o' a yewky owse to kill the tree whan he rubs hit's skin an' his ain aff thegither."

"Tut! nobody ever means, when he personifies the powers of nature, that they know what they are about."

"The mair necessar' till attreebute till them naething but their rale design."

"If they don't know what they are about, how can you be so foolish as talk of their design?"

"Ilka thing has a design,—an' gien it dinna ken't itsel', that's jist whaur yer true an' lawfu' personification comes in. There's no rizon 'at a poet sudna attreebute till a thing as a conscious design that which lies at the verra heart o' 'ts bein', the design for which it's there. That an' no ither sud determine the personification ye gie a thing—for that's the trowth o' the thing. Eh, man, Fergus! the jaws is fechtin' wi' nae rocks. They're jist at their pairt in a gran' cleansin' hermony. They're at their hoosemaid's wark, day an' nicht, to haud the warl' clean, an' gran' an' bonnie they sing at it. Gien I was you, I wadna tell fowk ony sic nonsense as yon; I wad tell them 'at ilk aen 'at disna dee his wark i' the warl', an' dee 't the richt gait, 's no the worth o' a minnin, no to say

a whaul, for ilk ane o' thae wee craturs dis the wull o' him 'at made 'im wi' ilka whisk o' his bit tailie, fa'in wi' a' the jabble o' the jaws again' the rocks, for it's a' ae thing — an' a' to haud the muckle sea clean. An' sae whan I lie i' my bed, an' a' at ance there comes a wee soughie o' win' i' my face, an' I luik up an' see it was naething but the wings o' a fittin' flee, I think wi' mysel' hoo' a' the curses are but blessin's 'at ye dinna see intill, an' hoo ilka midge, an' flee, an' muckle dronin' thing 'at gangs aboot singin' bass, no to mention the doos an' the mairtins an' the craws an' the kites an' the oolets an' the muckle eagles an' the butterflees, is a' jist haudin' the air gauin' 'at ilka defilin' thing may be weel turnt ower, an' brunt clean. That's the best I got oot o' my cheemistry last session. An' fain wad I haud air an' watter in motion aboot me, an' sae serve my en' — whether by waggin' wi' my wings or whiskin' wi' my tail. Eh! it's jist won'erfu'. It's a' ae gran' consortit confusion o' harmony an' order; an' what maks the confusion is only jist 'at a' thing's workin' an' naething sits idle. But awa' wi' the nonsense o' ae thing worryin' an' fechtin' at anither! — no till ye come to beasts an' fowk, an' syne ye hae eneuch o' 't."

All the time Fergus had been poking the point of his stick into the ground, a smile of superiority curling his lip.

"I hope, ladies, your wits are not quite swept away in this flood of Doric," he said.

"You have a poor opinion of the stability of our brains, Mr. Duff," said Mrs. Sclater.

"I was only judging by myself," he replied, a little put out. "I can't say I understood our friend here. Did you?"

"Perfectly," answered Mrs. Sclater.

At that moment came a thunderous wave with a great *bowuff* into the hollow at the end of the gully on whose edge they stood.

"There's your housemaid's broom, Donald!" said Ginevra.

They all laughed.

"Everything depends on how you look at a thing," said Fergus, and said no more — inwardly resolving, however, to omit from his sermon a certain sentence about the idle waves dashing themselves to ruin on the rocks they would destroy, and to work in something instead about the winds of the winter tossing the snow. A pause followed.

"Well, this is Saturday, and to-morrow is my work-day, you know, ladies," he

said. "If you would oblige me with your address, Miss Galbraith, I should do myself the honor of calling on Mr. Galbraith."

Ginevra told him where they lived, but added she was afraid he must not expect to see her father, for he had been out of health lately, and would see nobody.

"At all events I shall give myself the chance," he rejoined, and bidding the ladies good-bye, and nodding to the youths, turned and walked away.

For some time there was silence. At length Donald spoke.

"Poor Fergus!" he said with a little sigh. "He's a good-natured creature, and was a great help to me; but when I think of him a preacher, I seem to see an Egyptian priest standing on the threshold of the great door at Ipsambul, blowing with all his might to keep out the Libyan desert; and the four great stone gods, sitting behind the altar, far back in the gloom, laughing at him."

Then Ginevra asked him something which led to a good deal of talk about the true and false in poetry, and made Mrs. Sclater feel it was not for nothing she had befriended the lad from the hills in the strange garments. And she began to think whether her husband might not be brought to take a higher view of his calling.

On Monday Fergus went to pay his visit to Mr. Galbraith. As Ginevra had said, her father did not appear, but Fergus was far from disappointed. He had taken it into his head that Miss Galbraith sided with him when that ill-bred fellow made his rude, not to say ungrateful attack upon him, and was much pleased to have a talk with her. Ginevra thought it would not be right to cherish against him the memory of the one sin of his youth in her eyes, but she could not like him. She did not know why, but the truth was, she felt, without being able to identify, his unreality: she thought it was because, both in manners and in dress, so far as the custom of his calling would permit, he was that unpleasant phenomenon, a fine gentleman. She had never heard him preach, or she would have liked him still less; for he was an orator wilful and prepossessing, choice of long words, fond of climaxes, and always aware of the points at which he must wave his arm, throw forward his hands, wipe his eyes with the finest of large cambric handkerchiefs. As it was, she was heartily tired of him before he went, and when he was gone, found, as she sat with her father, that she could not recall a word he had said.

As to what had made the fellow stay so long, she was therefore positively unable to give her father an answer; the consequence of which was, that, the next time he called, Mr. Galbraith, much to her relief, stood the brunt of his approach, and received him. The ice thus broken, his ingratiating manners, and the full-blown respect he showed Mr. Galbraith, enabling the weak man to feel himself, as of old, every inch a laird, so won upon him that, when he took his leave, he gave him a cordial invitation to repeat his visit.

He did so, in the evening this time, and remembering a predilection of the laird's, begged for a game of backgammon. The result of his policy was, that, of many weeks that followed, every Monday evening at least he spent with the laird. Ginevra was so grateful to him for his attention to her father, and his efforts to draw him out of his gloom, that she came gradually to let a little light of favor shine upon him. And if the heart of Fergus Duff was drawn to her, that is not to be counted to him a fault—neither that, his heart thus drawn, he should wish to marry her. Had she been still heiress of Glashruach, he dared not have dreamed of such a thing, but, noting the humble condition to which they were reduced, the growing familiarity of the father, and the friendliness of the daughter, he grew very hopeful, and more anxious than ever to secure the presentation to the North church, which was in the gift of the city. He could easily have got a rich wife, but he was more greedy of distinction than of money, and to marry the daughter of the man to whom he had been accustomed in childhood to look up as the greatest in the known world, was in his eyes like a patent of nobility, would be a ratification of his fitness to mingle with the choice of the land.

CHAPTER XIII.

THE NORTH CHURCH.

It was a cold night in March, cloudy and blowing. Every human body was turned into a fortress for bare defence of life. There was no snow on the ground, but it seemed as if there must be snow everywhere else. There was snow in the clouds overhead, and there was snow in the mind of man beneath. The very air felt like the quarry out of which the snow had been dug which was being ground above. The wind felt black, the sky was black, and the lamps were blowing about as if they wanted to escape for the darkness was after them. It was the Sunday fol-

lowing the induction of Fergus, and this was the meteoric condition through which Donal and Gibbie passed on their way to the North church, to hear him preach in the pulpit that was now his own.

The people had been gathering since long before the hour, and the youths could find only standing room near the door. Cold as was the weather, and keen as blew the wind into the church every time a door was opened, the instant it was shut again it was warm, for the place was crowded from the very height of the great steep-sloping galleries, at the back of which the people were standing on the window sills, down to the double swing-doors, which were constantly cracking open as if the house was literally too full to hold the congregation. The aisles also were crowded with people standing, all eager yet solemn, with granite faces and live eyes. One who did not know better might well have imagined them gathered in hunger after good tidings from the kingdom of truth and hope, whereby they might hasten the coming of that kingdom in their souls and the souls they loved. But it was hardly that; it was indeed a long way from it, and no such thing: the eagerness was, in the mass, doubtless with exceptions, to hear the new preacher, the pyrotechnist of human logic and eloquence, who was about to burn his halfpenny blue lights over the abyss of truth, and throw his yelping crackers into it.

The eyes of the young men went wandering over the crowd, looking for any of their few acquaintances, but below they mostly fell of course on the backs of heads. There was, however, no mistaking either Ginevra's bonnet or the occiput perched like a capital on the long neck of her father. They sat a good way in front, about the middle of the great church. At the sight of them Gibbie's face brightened, Donal's turned pale as death. For only the last week but one, he had heard of the frequent visits of the young preacher to the cottage, and of the favor in which he was held by both father and daughter; and his state of mind since, had not, with all his philosophy to rectify and support it, been an enviable one. That he could not for a moment regard himself as a fit husband for the lady-lass, or dream of exposing himself or her to the insult which the offer of himself as a son-in-law would bring on them both from the laird, was not a reflection to render the thought of such a bag of wind as Fergus Duff marrying her one whit the less horribly unendurable. Had the laird been in the same social position

as before, Donal would have had no fear of his accepting Fergus; but misfortune alters many relations. Fergus's father was a man of considerable property, Fergus himself almost a man of influence, and already in possession of a comfortable income: it was possible to imagine that the impoverished Thomas Galbraith, late of Glashruach, Esq., might contrive to swallow what annoyance there could not but in any case be in wedding his daughter to the son of John Duff, late his own tenant of the Mains. Altogether Donal's thoughts were not of the kind to put him in fit mood — I do not say to gather benefit from the prophesying of Fergus, but to give fair play to the peddler who now rose to display his loaded calico and beggarly shoddy over the book-board of the pulpit. But the congregation listened rapt. I dare not say there was no divine reality concerned in his utterance, for Gibbie saw many a glimmer through the rents in his logic, and the thin-worn patches of his philosophy; but it was not such glimmers that fettered the regards of the audience, but the noisy flow and false eloquence of the preacher. In proportion to the falsehood in us are we exposed to the falsehood in others. The false plays upon the false without discord; comes to the false, and is welcomed as the true; there is no jar, for the false to the false looks the true; darkness takes darkness for light, and great is the darkness. I will not attempt an account of the sermon; even admirably rendered, it would be worthless as the best of copies of a bad wall-paper. There was in it, to be sure, such a glowing description of the city of God as might have served to attract thither all the diamond-merchants of Amsterdam; but why a Christian should care to go to such a place, let him tell who knows; while, on the other hand, the audience appeared equally interested in his equiponderating description of the place of misery. Not once did he give, or attempt to give, or indeed could have given, the feeblest idea, to a single soul present, of the one terror of the universe — the peril of being cast from the arms of essential Love and Life into the bosom of living Death. For this teacher of men knew nothing whatever but by hearsay, had not in himself experienced one of the joys or one of the horrors he endeavored to embody.

Gibbie was not at home listening to such a sermon; he was distressed, and said afterwards to Donal he would far rather be subjected to Mr. Sciater's *isms* than Fergus's *ations*. It caused him pain too to see Donal look so scornful, so contemp-

tuously even; while it added to Donal's unrest, and swelled his evil mood, to see Mr. Galbraith absorbed. For Ginevra's bonnet, it did not once move — but then it was not set at an angle to indicate either eyes upturned in listening, or cast down in emotion. Donal would have sacrificed not a few songs, the only wealth he possessed, for one peep round the corner of that bonnet. He had become painfully aware, that, much as he had seen of Ginevra, he knew scarcely anything of her thoughts; he had always talked so much more to her than she to him, that now, when he longed to know, he could not even guess what she might be thinking, or what effect such "an arrangement" of red and yellow would have upon her imagination and judgment. She could not think or receive what was not true, he felt sure, but she might easily enough attribute truth where it did not exist.

At length the rockets, Roman candles, and squibs were all burnt out, the would-be "eternal blazon" was over, and the preacher sunk back exhausted in his seat. The people sang; a prayer, fit pendant to such a sermon, followed, and the congregation was dismissed — it could not be with much additional strength to meet the sorrows, temptations, sophisms, commonplaces, disappointments, dullnesses, stupidities, and general devilries of the week, although not a few paid the preacher welcome compliments on his "gran" discourse."

The young men were out among the first, and going round to another door, in the churchyard, by which they judged Ginevra and her father must issue, there stood waiting. The night was utterly changed. The wind had gone about, and the vapors were high in heaven, broken all into cloud-masses of sombre grandeur. Now from behind, now upon their sides, they were made glorious by the full moon, while through their rents appeared the sky and the ever marvellous stars. Gibbie's eyes went climbing up the spire that shot skyward over their heads. Around its point the clouds and the moon seemed to gather, grouping themselves in grand carelessness; and he thought of the Son of Man coming in the clouds of heaven: to us mere heaps of watery vapor, ever ready to fall, drowning the earth in rain, or burying it in snow, to angel-feet they might be solid masses whereon to tread attendant upon him, who, although with his word he ruled winds and seas, loved to be waited on by the multitude of his own! He was yet gazing, forgetful of the human tide about

him, watching the glory dominant over storm, when his companion pinched his arm: he looked, and was aware that Fergus, muffled to the eyes, was standing beside them. He seemed not to see them, and they were nowise inclined to attract his attention, but gazed motionless on the church door, an unsealed fountain of souls. What a curious thing it is to watch an issuing crowd of faces for one loved one — all so unattractive, provoking, blamable, as they come rolling round corners, dividing, and flowing away — not one of them the right one! But at last out she did come — Ginevra, like a daisy among mown grass! It was really she! — but with her father. She saw Donal, glanced from him to Gibbie, cast down her sweet eyes, and made no sign. Fergus had already advanced and addressed the laird.

"Ah, Mr. Duff!" said Mr. Galbraith; "— excuse me, but would you oblige me by giving your arm to my daughter? I see a friend waiting to speak to me. I shall overtake you in a moment."

Fergus murmured his pleasure, and Ginevra and he moved away together. The youths for a moment watched the father. He dawdled — evidently wanted to speak to no one. They then followed the two, walking some yards behind them. Every other moment Fergus would bend his head towards Ginevra; once or twice they saw the little bonnet turn upwards in response or question. Poor Donal was burning with lawless and foolish indignation: why should the minister muffle himself up like an old woman in the crowd, and take off the great handkerchief when walking with the lady? When the youths reached the street where the cottage stood, they turned the corner after them, and walked quickly up to them, where they stood at the gate waiting for it to be opened.

"Sic a gran' nicht!" said Donal, after the usual greetings. "Sir Gibbie an' me 's haein' a dauner wi' the mune. Ye wad think she had licht eneuch to haud the clouds aff o' her, wad ye no, mem? But na! they'll be upon her, an' I'm feart there's ae unco black ane yon'er — dinna ye see 't — wi' a straik o' white about the thrapple o' 't? — There — dinna ye see 't?" he went on, pointing to the clouds about the moon, "— that ane, I'm doobtin', 'ill hae the better o' her or lang — tak her in-till 'ts airms, an' bray a' the licht oot o' her. Guid nicht, mem. — Guid nicht, Fergus. You ministers sudna mak yersels sae like clouds. Ye sud be cled in white an' gowd, an' a' colours o' stanes, like the new Jerooslem ye tell sic tales aboot, an,

syne naebody wad mistak the news ye bring."

Therewith Donal walked on, doubtless for the moment a little relieved. But before they had walked far, he broke down altogether.

"Gibbie," he said, "yon rascal's gainin' to merry the leddy-lass! an' it drives me mad to think it. Gien I cud but ance see an' speyk till her — ance — jist ance! Lord! what 'll come o' a' the gowans upo' the Mains, an' the heather upo' Glashgar!"

He burst out crying, but instantly dashed away his tears with indignation at his weakness.

"I maun dree my weird (*undergo my doom*)," he said, and said no more.

Gibbie's face had grown white in the moon-gleams, and his lips trembled. He put his arm through Donal's and clung to him, and in silence they went home. When they reached Donal's room, Donal entering shut the door behind him and shut out Gibbie. He stood for a moment like one dazed, then suddenly coming to himself, turned away, left the house, and ran straight to Daur Street.

When the minister's door was opened to him, he went to that of the dining-room, knowing Mr. and Mrs. Sclater would then be at supper. Happily for his intent, the minister was at the moment having his tumbler of toddy after the labors of the day, an indulgence which, so long as Gibbie was in the house, he had, ever since that first dinner-party, taken in private, out of regard, as he pretended to himself, for the boy's painful associations with it, but in reality, to his credit be it told if it may, from a little shame of the thing itself; and his wife therefore, when she saw Gibbie, rose, and, meeting him, took him with her to her own little sitting-room, where they had a long talk, of which the result appeared the next night in a note from Mrs. Sclater to Gibbie, asking him and Donal to spend the evening of Tuesday with her.

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THE POLISH ALPS.

POLAND is about the last country to which one thinks of going for mountain scenery. Prussia is flat enough; but Prussia has got the Hartz. Russia is worse; yet Russia, as we have learned to know, is bounded by the Caucasus, which exceeds in height and scarcely yields in beauty to the Swiss Alps. But Poland suggests only boundless plains and mo-

notonous forests, muddy rivers winding slowly through long tracts of marsh into a shallow sea. Such romance as the country has to most of us it derives from its sufferings, and from the vision of bands of insurgents eluding the pursuit of Russian columns in the depths of those pathless woods.

Nevertheless, Poland has a mountain region, and a very noble and beautiful region it is. Only let it be remembered that to the geographer Poland does not mean merely the Poland of this century, which has now been made politically a part of Russia, but old Poland as it stood before the partition; or, to be more exact, that country in which the Polish race dwells, and over which the Polish tongue is still spoken. That is to say, Poland includes Galicia, now a province of the Austrian empire; but in tongue, religion, habits, history, and sentiment just as representative of old Poland as Warsaw itself. And it is in Galicia that these Polish Alps lie, of which I am going to give some short description. Some seventy miles to the S.S.W. of Krakow, the hills which lie on the borders of Galicia and Hungary rise into a group or ridge of bold and lofty mountains, which the Germans generally call the central Carpathians, but which the natives know by the Slavonic name of Tatra. This mountain mass—which contains in a small area a great variety of scenery, and an extraordinary number of interesting peaks, lakes, and valleys—is most easily reached from the south, where a railway skirts it. But a much more interesting approach is from the north or Polish side, through the grand old city of Krakow.

Krakow is so little visited by Englishmen—so very little that when an unmistakable stranger is seen in the streets, conjecture can assign him no origin more distant than Berlin—that some account of it may not be unwelcome. It belongs to that melancholy but interesting class of cities of which Edinburgh, Dublin, Toledo, Venice, Trondhjem, and Kiev are examples—cities that have once been, but are no longer, capitals of independent States. Such cities have about them a twofold attraction. They have that air of having seen better days, of having enjoyed a pomp and power that have departed, which lends dignity even to commonplace externals, and gives an interest to what might otherwise be mean. The fragrance of autumn, the subtle charm of decay, hangs round them. And then the very fact that their growth has usually been

checked when or soon after they reached their meridian, has enabled them to preserve many traces of antiquity, which, in more prosperous towns, where old buildings are destroyed to make way for new, would have long since perished. In a city like Milan or Cologne every fourth or fifth generation pulls down the dwellings, the warehouses, even often the churches of its forefathers, to erect bigger or more commodious ones in their stead. London is the most conspicuous example of such ruin. But Krakow, like most of those sister cities just referred to, lost her great position as a capital quite suddenly, and has since then been nothing more than a provincial town, a sort of magnified county town, with few industries and only a moderate trade. Hence the old things have stood; and though, to be sure, private houses have been modernized, still the antique character of the place has suffered very little.

Krakow is the most distinctively Polish city in all the region which once was Poland. Warsaw is a recent and upstart place by comparison. It did not become the seat of government till the seventeenth century, and of late years it has been to some extent Russified. But the older city is still thoroughly national. The Polish language is the official speech, the traditions of the departed monarchy cling round the cathedral where the national heroes lie buried, and the castle, where the kings of the older dynasties held their barbaric feasts.

Krakow lies near the southern edge of a vast plain—that vast plain that stretches all the way northward to the Baltic, and eastward to the Ural Mountains. On the south the country, at first gently undulating, rises by degrees into high hills, whose tops, some twenty or thirty miles distant, give a blue background to the landscape. It is a well-cultivated country, with patches of forest here and there, but, in the main, of open arable and pasture land, dotted over with frequent villages. Across the plain, and just washing the city, flows the broad and sluggish Vistula, too muddy for beauty, too shallow for much navigation, but still with an air of dignity about it not unworthy of the national river of Poland. Within, the aspect of the city is curiously different from that of the German towns which the traveller has lately left. The streets are wider and more straight, and in the centre there is a great open square somewhat like the *meidan* of the East, where fairs are held, and round which the best shops and the chief *cafés* are planted.

The houses are tall and solid; some of them look as if they had been, and indeed probably were, the palaces of that turbulent old nobility whose descendants have now been reduced to poverty, or cherish in a hopeless exile their memories of departed greatness. The hotel in which we stayed was one of these—a tall pile with walls thick enough for a mediæval castle, broad stone staircases, a great gallery running on each floor round a courtyard, and lofty chambers in which one felt lost at night. The churches, whose bells clang without ceasing, have the same air of grand but somewhat ponderous gloom. Architecturally they are not very striking, and more interesting from the beautiful glass and the wood-carvings which one or two of them contain than from any peculiarities of their style, which is that of east Germany. One has frequent occasion to remark in these countries for how much more the influence of religion may count than does the influence of race. As Catholics who had got their Christianity from the West, the Slavonic Poles, like the Slavonic Bohemians, looked always towards the West, and were in intimate ecclesiastical as well as political relations with Germany and Hungary. They were, indeed, for a long time dependent on the Germanic empire. Their churches, therefore, are of a German Gothic, and were probably designed by German builders; while their kinsfolk, the Russians, having been converted by missionaries of the Orthodox Eastern Church, belonged to an utterly different sphere, and followed the models of Constantinople in architecture and art as well as in discipline and ritual. The cathedral of Krakow (which has been the seat of an archbishop for many centuries) stands on the only height in the city—a steep bluff overlooking the Vistula, and commanding a splendid prospect to the north and east along its winding shores. This bluff was probably the first inhabited part of the city, and very likely the fortified kernel round which it grew up. It is in fact an acropolis, well placed both for defence and to command the navigation of the river. The top of the hill is covered by the palace of the kings, a huge but rather ugly mass of buildings, no part of which looks older than the sixteenth century, while most of it is evidently later. It has now been turned into a barrack, and its dull stuccoed courts and interminable galleries are full of white-coated soldiers lounging about and chattering in all the tongues which an Austrian army speaks. Close to the palace, and squeezed in be-

tween it and the edge of the abrupt hill-slope, is the cathedral. It is a small church, which would go inside the nave of York Minster, and its exterior is ungainly. But its historical associations more than make up for any want of visible majesty. It teems with monuments that call up the greatest names, the most striking incidents, in the long story of Poland's greatness and decay. It is the Westminster Abbey of the Polish people. The high altar is adorned by a sumptuous silver shrine under which rest the bones of St. Stanislas, the martyred patron saint of the nation, who was bishop of Krakow, and slain by a ferocious king in the eleventh century. The chapels on both sides were most of them erected by one or other of the great families, and contain busts of them and pictures representing famous scenes in Polish history. One has a superb "Christ" by Thorwaldsen. In the crypt beneath, to which you descend down a staircase whose top is covered by a brazen trap-door, are the tombs of the kings, their wives and children. You are led with flickering candles through a labyrinth of chilly vaults, and faintly discern amid the gloom the huge sarcophagi within which lie the bones of forgotten potentates—potentates whose very names the Western traveller has scarcely heard, but who ruled a kingdom larger than France, a kingdom that stretched from the Oder to the Dnieper. The earlier tombs, beginning from the twelfth century, are very rude, and all are plain and massive. Only two uncrowned heroes have been admitted into this royal sepulchre, the last two heroes of the nation—and are they to be its last?—Kosciuszko and Poniatowski. They lie in the central vault, on either side of the coffin of John Sobieski. But the spot in the church which speaks most of all to a Polish heart is the main chapel of the choir immediately behind the altar of St. Stanislas. Here Polish sovereigns were crowned from the first building of the cathedral down till the melancholy end. Here are set, facing each other, two chairs of state. The one is the archiepiscopal chair of Krakow; the other is the throne of the king of Poland, the throne that has so long stood empty, and is never to be filled again. Its gilding is tarnished; and the dust lies thick upon the faded red silk that covers it. In this bare and silent chapel, which once echoed to the shouts of the assembled nobles, it is the most pathetic emblem of the extinction of a powerful kingdom and the enslavement of a gifted people.

There are not many sights in Krakow; and if there were, I should not attempt to describe them, since nothing is duller than the guidebook-like enumeration of details, into which one slides in trying to be exhaustive. Still the Jewish town ought to be mentioned, for the Jews are the most striking feature in the population of the city. They were, as old writers say, brought hither by King Casimir the Great in the fourteenth century, and settled in the suburb, which they still inhabit, and which is called from him the Casimir city. It is altogether unlike the inner city, with streets wider, houses comparatively low and mean, and an indescribable air of dirt and squalor pervading everything. There is an immense bustle of buying and selling going on — a sort of perpetual Rag Fair — chiefly in wearing-apparel, but also in all sorts of articles of domestic utility, furniture, pots and pans, shovels and gridirons, pottery (all cheap and ugly), and small groceries. The dealers are mostly outside their doors, where indeed the greater part of the wares are displayed, and solicit the passer-by in Polish, Hebrew, or, more rarely, German. There are altogether in Krakow, whose total population amounts to forty thousand, over twelve thousand Jews. The great majority are Orthodox or Rabbinical, and are distinguishable by their long straight coats of cloth or alpaca, coming almost to the ankles, tall and narrow-brimmed hats, and little wispy curls on either side of the face. Such a hideous dress creates a prejudice against them, which is in large measure unjust, for they are a valuable element in the population of Poland, and get on better with the Christians than is the case further east, or even in Germany. A few have begun to drop the peculiar dress, with the strict observance of the law, and may before long be absorbed in the body of the people. Though the race would seem to have kept pretty much to itself all these centuries, there is a great diversity of complexion among these Polish Jews. Many are fair in face; some have sandy hair; but the characteristic features are seldom absent. In Poland, as elsewhere, they are town-folk, never settling down to till the soil; and their bustling activity makes them seem even more numerous in Krakow than they really are, so that a stranger might fancy it a Jewish city. It is by no means stagnant or decaying; for the converging railways and its position in a fertile country make it a place of considerable trade. But this hardly qualifies the air of melancholy that broods over it. The Poles are

by nature, like their nearest relations the Bohemians, a bright and vivacious people. Those who know the Slavonic race best generally agree in holding them to be its most highly gifted branch. And here in Galicia they do not seem to have much misgovernment to complain of, nor perhaps anything more than the pedantry, formalism, and backwardness which characterize Austrian rule everywhere. The Polish tongue reigns, and Poles are freely admitted to the best posts under government which industry and talent can win. Nevertheless, the sense of the past, of the downfall of their monarchy, and the apparently destined extinction of their nationality, seems to lie like a load upon their souls. Krakow, with its grand old houses, its picturesque crowds, its pleasant gardens engirdling the houses, its bells chiming ceaselessly in the clear summer air, is withal a place of sadness.

There are two excursions which every visitor is expected to take, on pain of being regarded as contemptuous of national feeling. The first is to the Hill of Kosciuszko, and it has the merit of being short and easy. Three steep mounds or hills rise from the plain near the city: one is called the Krakus Hill, from a mythical Krakus who slew dragons and gave his name to the town; another is named from some female heroine of legend; and the third, which lies about two miles off, has received its name from a lofty mound of earth, which was heaped up on the top of it in honor of the patriot after his death. Nobles, burghers, ladies, labored with their own hands in piling it up; bags and baskets filled with earth were brought from every part of the dominions of the ancient Polish kingdom to be added to the heap; and thus it was raised in a steep, grass-covered cone to a height of about eighty feet above the top of the hill. You approach it through the strong walls of the fort which crowns the hill — one of several that protect Krakow — and ascend the conical mound by spiral paths. On the summit is a huge boulder of gneiss, with the single word "Kosciuszkow" carved upon it. The prospect is magnificent; and most so at sunset, when we saw it, blue ridges rising one behind another to the south, the towers and spires of the city glittering under the dying light, and the smooth stream winding through gardens and hamlets and happy autumn fields till it is lost beyond the Russian frontier in the boundless plain. Looking over that plain, looking from the stone inscribed with Kosciuszko's name, over the country

for which he and so many others bled in vain, one is reminded of the Greek saying that the whole earth is the tomb of famous men, and understands the feeling which planted on this commanding height so noble and so simple a monument to the last hero of the nation.

The other expedition that must be made from Krakow is to those enormous salt-mines, stretching over, or rather under, many miles of land, by which it is chiefly known to the world at large. They are at a place called Wieliczka, about seven miles from the city. Having seen many salt-mines before, having been heartily bored by them, and being moreover of an indolent turn of mind, I at first refused to go. However, I was blessed with the company of two energetic friends; one of whom has seen most things in Europe and Asia, and is not satisfied yet. He represented that it is a piece of presumption for an individual traveller to attempt to be wiser than the rest of the world, who have agreed that certain sights must be seen, and clinched his arguments by declaring that anyhow he would go himself. Knowing how defenceless is the position of a man who has not seen what his companions have, I submitted forthwith. And he was quite right, for the mines are well worth visiting. Not that there is anything of special interest either in the geological or mineralogical way, or in the science of mining; at least, if there is, we were not shown it. But some of the effects are wonderfully fine. You are admitted on two days in each week, and then in a large party, thirty or forty at least, a pretty heavy charge being made for the illuminations. After descending some four hundred feet, you are led through long dark passages from one huge vaulted hall to another; sometimes looking up from beneath to a roof almost lost in gloom, again looking down from an aperture near the top of one of these chambers upon lamps glittering faintly far below. In several of the largest halls Bengal lights are burnt and rockets let off—a cockneyfied sort of thing, one may say; but when one of these vast caverns suddenly starts into full light, and its countless crystals flash upon you from walls and roof, the imagination is touched in no common way. You think of the Hall of Eblis in "Vathek;" or those subterranean palaces of the "Arabian Nights" where the treasures of the jinn lie concealed; or Virgil's vaguely grand descriptions of the lower world. At one point the low dark corridor emerges on the edge of a deep pool, where a

barge lies which takes some of the visitors, and moves silently with them across the black water and under an arch of rock into a second pool, till the lights and voices are almost lost in the distance. It was Charon and the Styx to the life—if one can talk of life in such a connection.

He who would reach the Polish Alps from Krakow has two courses open to him. He may go by railway, making a circuit of a whole day's journey by way of Oderberg to reach their southern foot; or he may hire a vehicle, and, after driving for a long day and a half, find himself at their northern base. Wishing to see something of Galician country, we chose the latter plan, sending round our baggage by the train, and retaining only such light things as could be carried over the mountains. The vehicle we procured was the usual peasant's wagon of central Europe. It is a long, low, narrow, springless cart, with low wattled sides and four small wheels, having a kind of framework over it, by which you can cover the top and sides with canvas, and so obtain some protection against both sun and rain. The inside is filled with hay, reclining upon which you suffer less than might be expected from the bumping and jolting. One of us sat beside the driver on a board fixed across the cart; the other two ensconced themselves behind in the hay; while at the tail-end of all was placed the baggage. Two horses are harnessed to this contrivance with some bits of rotten rope, which require mending every hour or two; and with much noise and shaking, one accomplishes, on level ground, about four or five miles an hour. It must be rather trying to the vertebrae on a long journey; but is quite endurable for a day and a half, and has, withal, so much of "local color" about it that one feels bound not to complain of the discomfort. However, I don't recommend it for invalids or ladies.

We set off at half past five A.M., in a fog so dense that we narrowly escaped several collisions with other wagons which were coming in to market in a long string; nor did the sun shine out till, about half past seven o'clock, we reached the first halting-place, a village nine miles from Krakow. As the same horses are taken all the way, frequent stoppages to give them rest and food are necessary: nor is the traveller sorry to stretch his legs and ramble through the peasants' houses. We were then in a wholly different country—a country of steep though not high hills, bright pastures interspersed with woods and frequent vil-

lages. It reminded us of the lower parts of the Yorkshire fells, or the outskirts of the Scottish highlands, with grass just as green, and a profusion, even in August, of ferns and wild-flowers. The roads were almost covered with gaily-dressed peasants wending their way to church or market; some in wagons like our own, but the greater number in long processions, thirty or forty strong, which moved slowly along in loose array, generally preceded by a priest or two with attendants carrying banners. Many of them were singing; and the sound of the hymns rising through the still air, and often heard before the companies came in sight, lent an additional charm to the scene. Towards noon we rattled into the market-place of the town, where our driver meant to take his midday halt. It is called Myslenica—a straggling place of perhaps two thousand souls, built, like all Polish villages, round a big, irregular, open space, which seems the larger because the houses are so low. The whole population of the district seemed to have poured in. The large church was crowded to suffocation; and in the walled enclosure which surrounded it hundreds were sitting on the grass, the men on one side, the women and children on another, waiting till their turn should come to enter; some praying or reading their books of devotion, and all perfectly still and silent. Such a picture of devotion we had never seen; and I doubt if even Ireland is so profoundly and earnestly Catholic as Galicia. The shrines and crosses along the roads are more numerous than anywhere else in Europe—certainly more so than in Spain, France, or even Tyrol—and nobody passes the smallest of them without taking off his hat. It was pleasant to notice how well these simple peasants were dressed, how happy and cheerful they looked. Though their houses are rough enough, they are not squalid; there is a general air of primitive comfort. The impression of melancholy one gets in Krakow is not felt in the country parts of Galicia, where the peasantry are as well off as they have ever been, and far better than in the not very distant days of serfdom. Now they have fixity of tenure and immunity from forced labor. Politics they never knew or cared about, for all the Polish risings were the work of the nobles and the townfolk. Even in Russian Poland the peasants took but little part in the last two struggles; and, as everybody knows, they were sometimes actually hostile to the insurgents. They are a good-looking people, these Galicians, the men tall and well-made; the

women with plenty of color and fine eyes, though the hard toil of the field soon tells upon them; and their looks are set off by a picturesque costume, gaily striped petticoats, and bright red or blue handkerchiefs tied over the head. We wondered to see no Jewish faces, and fancied there might be none; but, stumbling upon a school full of Jewish boys, perceived that here, too, the Jewish element was present, though of course it did not figure in the crowd of churchgoers.

The road southward from Myslenica ran through a country of higher hills and narrower dales, following the course of a rapid mountain stream till at last it began to mount, and after a long, slow ascent brought us about four o'clock to the top of a ridge nearly three thousand feet above the sea, from which the main range of the Polish Alps—or, to call them by their proper name, the Tatra—revealed itself in all its grandeur. Some twenty miles off, as the crow flies, beyond lower hills and a wide valley, rose a line of steep, rocky peaks, their lower slopes covered with dense forest, their upper zone flecked with patches of snow, and showing against the sky a crest of jagged rock-teeth, which now and then towered up into some great pinnacle. This mass is the Tatra, which we had come so many hundred miles to explore. Even less eager mountaineers might have rejoiced at such a tempting prospect of glens, crags, *arêtes*, and soaring summits, everything, in fact, except glaciers. There are lakes too, and plenty of them—lakes of exquisitely bright colors, lying under the shadow of great granite precipices; but these do not appear in a distant view, so deeply sunk are they in the upper hollows of the vales. Following the mountain line to the west, we saw it decline into mountains still of considerable height, but far less rocky and savage in their character than the mass in front, which trended away as far as the eye could follow. Eastward there were clouds, and we could make out nothing.

From this "specular mount" we descended over many lesser ridges, which the road climbed straight up and down, into the valley of the river Dunajec, and long after dark reached the town of Nowy Targ (New Market). Though one pair of horses had done over fifty miles in the day, and climbed many thousands of feet in these tremendous hills, they had a good trot left in them at the last, and wanted no whipping. Like nearly all the inns in Poland, the inn at Newmarket is kept by a Jew. Good it was not, but the wonder

rather is that in such an out-of-the-way place there should be a passable inn at all. It was certainly better than one would have found in a town of the same size in Russia, of which we were reminded when, on being asked for tea, they brought an enormous brazen urn, the well-known Russian *samovar*.

Newmarket is a good sample of the Polish country town. It has a great, open, ragged-looking space in the middle, called the Rynek, where rubbish is thrown, and wagons stand, and booths are set up. Round this stand houses of one or two stories high, built of brick and white-washed, mostly taverns and general stores kept by Jews, as one could tell from the names over them, which are usually German and refer in some way to the precious metals — Goldenberg, Silbermann, Goldhammer, and so forth. All the other houses in the place were of wood, and many of them little better than shanties, built quite irregularly outside the square, and rambling off into the country. We were not sorry to leave such an uninteresting place, where even the church, a big, ugly modern building, had nothing to show, and to press on to the mountains that rose like a wall to the south. The way leads over a stretch of level land cultivated in long narrow strips which are separated by neither wall nor hedge nor fence, and belong, as far as we could make out, to the peasants who hold them on a sort of communal system, having the pastures in common and these patches in severalty. The commonest crops are oats, rye, hemp, flax, buckwheat, beetroot, and potatoes. An odd result of the absence of fences is that when a cow or sheep is turned out to graze on a bit of grass land, it has to be watched to keep it from browsing on the crops. So every here and there you see a man or a boy holding the end of a rope to which is fastened a grazing cow — pretty strong evidence that wages must be low and labor plentiful in a land where a man's time is of no more value than a cow's feeding. Up here the population seems as large as in the country round Krakow, but the villages are rougher. All the houses are of unhewn logs, with the interstices stuffed with moss or mud. Even in a large hamlet, they are not built in regular lanes, but stand all nohow, each dwelling having its hay-house and its cow-house beside it, and sometimes a tiny garden, two or three yards of ground walled in with a rowan bush, a tansy, and a poppy growing inside. The people are better-looking than round Krakow, but the

men handsomer than the women. The former have good bold features, and especially well-formed noses; the women have little to attract except a freshness of color and a simple frank expression. As one usually finds among hard-worked rustics, the children are prettier than their elders. Both hair and eyes are oftener light than dark. Everybody wears a white or grey woollen coat or tunic, and over it a short sleeveless sheepskin jacket; it is rare to see the big sheepskin overall in which the Russian peasant passes his whole life. Many were the questions we longed to ask as to the circumstances of peasant life; but unluckily we were quite cut off from communication not only with the villagers, but even with our driver, who knew not a word of German or of anything but his native Polish. He was a strange, wild creature, tall, stalwart, and handsome, with bold features, dark hair hanging in long locks round his cheeks, and an expression like that of a startled fawn. Not that I have ever seen a startled fawn; however, his expression was just that which the startled fawn is supposed to wear. Like a true child of nature, he could not be got to comprehend that we did not understand his Polish; and whenever we motioned to him to stop or go on, or pointed to the hay and made signs that we wanted it shaken up again to make a comfortable seat, he went off in a flood of words, and, when he saw, after explaining everything, that no impression had been made, gazed at us more wildly than ever out of his fine eyes, tossed his head with a kind of sigh, shook his reins, and called to the horses, which, at any rate, understood him. It is odd how hard it is for any but the most civilized people to realize that what is so easy to them as speaking their own language, should be impossible to others. The last trace of the phenomenon may be found in the disposition a man has to raise his voice in talking his own tongue to a native, which one remarks so often in the English or American tourist on the Continent. He cannot rid himself of the notion that it is the hearing ear and not the understanding mind that is at fault. This poor driver of ours was withal a sensitive creature. One of us had, while filling a pipe, given him some tobacco, and, liking it better than his own, he every time thereafter held out his pipe to us for a further supply. When this had gone on all day, another of the party, getting tired of it, demurred to the repeated request. The Pole's face darkened; he turned away in high dudgeon; and we had to press tobacco on him for

ten minutes before he would be appeased and accept it.

After driving four or five hours from Newmarket over the nearly level floor of the valley, we came in the afternoon to the foot of the hills and the edge of the great pine forest that clothes them. Turning up a narrow road, black with cinders, which led through the pines, we entered a glen, passed several iron forges, and came at no great distance to the little village of Zakopane, where our journey ended, and which, as the tourist's best headquarters in the Polish Alps, merits a more particular description.

Zakopane is the general name of a village or commune, which consists of several hamlets lying scattered over a large area, and resorted to for the mineral springs which rise out of the limestone rock. The best-placed of these, and the one to which we had therefore come, is called the Ironwork, or sometimes the Hammer. It stands near the mouth of a glen, some five or six miles long, which runs due north from the axis of the range dividing Galicia from Hungary. On each side are steep mountains, covered below with forest, and at the top breaking into picturesque crags of limestone. Down the middle runs a foaming stream of exquisitely clear green water, and behind, at the head of the valley, great peaks rise up against the brilliant southern sky. The hamlet consists of a row of iron forges, with some cabins for the workers beside them; a miniature bathing-house; an inn, a few primitive lodging-houses, and the residence of the Prussian baron who has lately bought this property, and is now working the forges. His *Schloss*, as it is somewhat grandly called, is a large villa cottage, more like an Indian bungalow than a castle, with a pleasant flower-garden in front, which the baron, who is a genial, active, practical man, throws open to the use of the visitors. He lives here himself all the summer months, makes the acquaintance of travellers, and has done a good deal for the neighborhood in more ways than one. Capital is sorely wanted in Galicia; and, unpopular though the Germans generally are among their Slavonic neighbors, a Berlin capitalist who spends money in local improvements, and is a good fellow to boot, does not fail to be appreciated.

The inn is the centre of this odd little backwoods settlement. It is a one-storied building of stone, and, indeed, of very solid stone, standing on a high bank above the river, whose babble mingles with the thud

of the forge-hammers all night long. The bedrooms, six or eight in number, are all but absolutely bare of furniture; and the public one, where people "meal" (as the Americans say), and smoke, and talk, and play cards all the evening, is about sixteen feet square, and therefore a trifle small for the whole visiting population of the place, which resorts to it for dinner and gossip every evening. For a wonder, it is not kept by a Jew. The landlord, a whimsical old fellow with blue spectacles, of which one glass was twice as blue as the other, was never tired of telling us that he was a Pole and no Jew, and dilating on the consequent superiority of his house to the Israelitish establishments in the other hamlets of Zakopane. He flitted about in zigzags like a dragon-fly, buzzing away in his talk, and continually summoning the overworked waiter to do this or that for the lordships from Berlin. (Any German-speaking stranger is put down to Berlin; and as we had not ourselves started the notion, so neither did we feel called on to destroy it.) One of us mildly hinted a hope that the beds were clean. "Clean!" he screamed; "do you take me for a Jew? I cannot so much as endure a flea; no, not a flea: a single flea has before now driven me mad and kept me awake all night. Hasn't it driven me mad, quite mad?" apostrophizing the scurrying waiter and the maid in the adjoining kitchen. Notwithstanding which assurance, some of the party had anything but good nights under this Christian roof.

Towards sunset the guests, some of whom were bathing in the cold-water establishment, while others had merely come for an autumn holiday, used to gather from the little boxes in which they sleep to the dining-room of the inn; and here eating and talking and cards went on through half the night. Most of the visitors are Poles, either from Galicia or Russian Poland; a few Russians, a few more Germans from Silesia or the Baltic provinces of Russia. Nearly every educated Pole talks some German, so the Western traveller is not ill off for conversation. We had, however, more talk with the Germans, and amused ourselves by getting at their views of Polish men and things. I asked one of them, who had lived both in Hungary and Poland, and who, among other pieces of information, told me that the Hungarian language was Semitic, and greatly resembled Hebrew, how he liked the two nations. "I don't take to the Magyars much," he answered; "they are hard to get on with, thinking so highly of

themselves and their country; but I like the Poles still less. It is a false people, a treacherous people, a people you cannot trust." It amused us to remember that this is the one reproach which every nation, whatever else it says, is sure to bring against its neighbors. The Romans talked of *fides Punica*; the French talk of *perfidie Albion*; the Turks say, "He lies like a Persian;" the Germans seldom speak of their dealings with Frenchmen or Italians without a sneer at "Welsh falsehood" (*Wälsche Untreue*). Each people, I suppose, does not understand how the mind of its neighbors works, and can account for the discrepancy between the sense in which it understands a promise and the way in which the promise is interpreted or performed by the other party only by supposing intentional fraud. Or is it that men are really so much less scrupulous in dealing with foreign nations or individual foreigners than with their own country-folk?

Society might grow monotonous to a Berliner or an Englishman in this little community; for, after all, one soon exhausts the topics of conversation with people of another country. But fortunately there are plenty of charming excursions close by, and the glen itself is so pretty that even to stroll round the village is a pleasure in fine weather. Fine weather is essential, for the sitting-room is so small, and the bedrooms so damp—rain dripping through most of the ceilings—that the greatest lover of solitude and the picturesque could not hold out long against continued rain. It would be tedious to describe the drives and the more numerous walks which may be taken from this central spot; but a general idea may be given of the sort of scenery. The main axis of the mountains runs nearly east and west, and forms the boundary between Galicia and Poland. From it there are thrown off a number of spurs or transverse ridges, running generally north, and separated by deep, narrow glens from four to eight miles in length, opening out into that wide valley plain which I have already described. The glens and the hillsides for a considerable height are clothed with thick pine woods. Above the pines are stretches of bright green pasture; and, highest of all, picturesque crags of limestone rise from these pastures into peaks some six or seven thousand feet above sea-level. As the whole country lies high—Zakopane itself in the valley is over three thousand feet above the sea—these heights are not great enough to make the scenery very imposing. But nothing

can in its way be more beautiful. The white cliffs contrast finely with the dark green woods; the valleys are made vocal by rushing, foaming brooks; the woods themselves are full of a lovely undergrowth of ferns and shrubs; and here and there, where some great mural precipice towers over the upper basin of a valley, the landscape rises to grandeur. It is a lovable sort of country—a country not on too vast a scale to be enjoyed in an easy fashion. The summits are not too lofty or too distant to be scaled in an afternoon by an active climber; the glens not too long to be thoroughly explored by a lady. Any one with something of an eye for country, and Professor Kolbenheyer's capital little handbook in his pocket, needs no guide. There are chamois among the rocks (though there are also game-laws to protect them), trout in the streams, and plenty of scarce plants. The botanist who clambers among the cliffs, will find places difficult enough to test his head and the toughness of his fingers. One glen deserves a few words of special mention. It is the Strazyska dale, running parallel to the dale of Zakopane, and only some three miles west from the Ironwork village. You follow a path along the northern foot of the hills, and turn south up this narrow glen, where a rough track winds along the bank of the stream, crossing and recrossing it by stepping-stones. Soon the dell grows narrower, till there is only room for stream and path. A long row of towers of white rock, forty to sixty feet high, rise on the right out of the dense wood, while opposite the hillside rises so steeply that the pines can but just hold on to it. Still farther up the vale widens, and a soft slope of rich green pasture appears, with three or four chalets standing upon it, where cheese is made during the summer, and the cowherds live. Through the forest which encircles this glade one sees waterfalls flashing out; and behind, closing in the glen, is a mighty wall of rock, its smooth grey front colored by streaks of blue and black, where some tiny rill trickles out from a crevice or drips along the face. You halt for milk or whey, which the friendly herdsmen have usually at hand, and may then climb to the top of the precipice by a circuitous path and enjoy a noble prospect over the plains of Poland and Hungary. Or you turn eastward over an easy col which divides this glen from the next, and return down it, through scenery scarcely less lovely, mossy woods, and miniature cliffs draped with tufts of *Edelweiss*, to your humble quarters at Zakopane. It is

not exciting, like a great snow expedition in the Alps or Pyrenees; but it is hardly less beautiful; and the quiet sylvan solitude of these mountains gives them a charm of their own, a distinctive sentiment which is wanting where one is oppressed by the proximity of tremendous peaks.

This is the character of the country immediately round Zakopane, which I have described first because it is the best centre — indeed, almost the only spot from which the Polish Alps can be comfortably explored. But a little farther to the east — in fact, as soon as one crosses a low pass into the next valley — it changes completely. For here one leaves the limestone hills and comes upon the far more stern and thrilling scenery of the central mass of granite. The simplest way in which I can give some idea of this region is by describing an expedition which we made from Zakopane to the summit of the principal, indeed almost the only, pass over the main chain from Hungary to Poland, and which goes by the name of the *Polnischer Kamm*. It is a two days' walk; one day over the *Zavrat* pass to the Fish Lake (*Halas tó*); and another from the Fish Lake to *Schmek*s, the great watering-place of northern Hungary. We set out from Zakopane at eight o'clock on a threatening morning in August. It was no easy matter to get off; for at the last moment one of the guides, or rather porters, who had been engaged for us, demanded exactly twice the regulation pay; and we were obliged to replace him, since it would never have done to break through the tariff which the local authorities have established. That tariff is certainly low enough, according to Swiss notions, being one and a half gulden (less than three shillings) per diem. When this difficulty had been settled, another arose. The landlady presented a bill three folio pages long, written in very cramped and undecipherable German handwriting — a bill which by dint of enumerating everything supplied to us during two days, down to sheets for the beds (charged separately from the rooms and the beds), and mustard at dinner, brought out so absurdly large a total that we could not in common fairness pay it. It was provoking to find that even primitive Zakopane is not wholly unspoiled, and that the rule, the less you get the more you pay, holds true here as elsewhere. A party of Polish gentlemen, including the rector of the University of Krakow, had started an hour before us; but our quicker English pace brought us abreast of them by the time that we got into the next val-

ley, where a general halt was called to drink milk at a cluster of huts. One usually finds a *châlet* or two in every glen; but far fewer than in the Alps, and never at such great elevations. While the lowlands of Galicia are fully as populous as France or south Germany, the mountain districts are much less so. One may travel for miles up the bottom of a glen without meeting a soul; indeed, there are no villages at all fairly within the mountain region; they all lie just outside, where the valleys open into the plain. Perhaps the reason is that there is so much less pasture land, the ground that is not covered with forest being mostly steep and rocky. From the *châlets* we turned off the track up the glen to visit a little lake which is notable as being the only one in the district whose waters have a light green tint. All the rest are either dark green or dark blue. It lay about two miles off at the foot of the magnificent granite peak of *Swinnica*, one of the highest and boldest of the whole group (7,574 feet above the sea). Unfortunately, the clouds were so thick that no color was discernible: the lake was simply murky, like all its brethren. Regaining the main path and mounting another glen through a wilderness of loose rocks, we came to the *Czarny Staw*, or Black Lake, a large sheet of water which lies in a deep hollow surrounded by magnificent black precipices, their tops riven into fantastic teeth of rock, miniature *aiguilles*, most of which looked hopelessly inaccessible. Indeed, it was hard to say how any exit could be found from the amphitheatre of crags, so steep were the acclivities towards the south, where our route lay. Clambering up a gully, and passing several little fields of snow, we emerged on a second and higher hollow, in whose centre lay another but much smaller lake, half of which was covered with a sheet of ice, and on whose margin we discovered quite a garden of scarce Alpine plants studding the patches of herbage where a tiny rill descended from the melting snows. From this it was a stiff pull of an hour, first upon solid rock and then over loose stones lying at a high angle, up to the crest of the *Zavrat* pass, which we reached soon after noon. Here we were greeted by a blast of wind so violent that we could not sit on the top, but had to crouch down behind and peer over. The crest is a positive knife-edge — you may almost anywhere sit astride of it — and this is the rule all through the granite mountains; it is one of their most striking features.

We were now immediately below the

noble peak of Swinnica, whose central position gives it one of the finest views in the whole Tatra. But after mounting some three hundred feet, the wind, coming with thick showers, blew with such force that it was impossible to keep one's feet, and even to return to the rest of the party at the col was not easy. There would indeed have been little use in going on, for the mist allowed nothing to be seen. Below us lay a profound valley, full of cloud, through which a bare dreary lake surrounded by loose masses of rock could just be discerned, and beyond the lake another lofty ridge, the frontier of Hungary. A more lamentable landscape could not be imagined; and at this moment the showers settled into a fierce pelting rain, which drove us down into the valley in the hope of shelter behind some of the vast blocks which strew its floor. It was rather an object not to get drenched; for we had no change of clothes, and one of the party was far from well. Huddling behind the blocks while the rain was heaviest, and running on ahead when it abated, we gradually made our way down this valley, which bears the name (I forbear to give the Polish) of the Valley of Five Lakes, and reached the biggest of the five, which in any other weather would have been beautiful, and even now had a certain dismal majesty about it. At its lower end the stream which it discharges from it thunders down a precipice in two magnificent leaps, making a fall that would be fine anywhere, but which was specially striking from the dazzling purity of the water. Even finer than the cascade was the view. Beyond the deep glen into which the river plunged, rose a savage ridge — the Zavrát, from which the pass we had crossed takes its name — its top showing a long sky line of serrated crags and spires, its face seamed with gullies, and clothed, where not too steep for vegetation, with dense masses of dwarf pine, whose dark green gave an indescribably sombre hue to the scene. One even grander view, however, still awaited us. Leaving the main valley, and keeping along the mountain-side till the path began to turn again southwards towards Hungary (for all this time we had been still in Poland, on the north side of the main ridge), we came, about six in the evening, to a point from which a new landscape opened before us. Standing at a height of about five thousand feet, we saw immediately beneath us, towards the south-east, a valley full of deep black pine forest. Its upper end is filled by a large and nearly circular lake, and above the lake towers a

range of granite cliffs, worthy of the Alps or the Caucasus. At every point but one, they rise with terrible steepness from its still waters; and at that one point a sort of recess has been carved out of the mountain, in which there lies upon a shelf (so to speak) a second and smaller lake, girt in by precipices even more terrible. It is a perfect cirque, rivalling the cirque at Gavarni, or that other in the bosom of the Sorapis, behind Cortina d'Ampezzo, which lovers of the dolomite mountains know so well. Indeed, it is in one respect grander than either of these more famous spots. For in both of them the rocks are limestone, while here the solid strength of the granite gives a wilder, grimmer, more majestic character to the scene. The weather, from which we had suffered so much during the day, was now all that could have been desired. A huge blue-black cloud stood up into heaven behind the great peaks, and threw over them, and the abyss in which the lakes lay, a more than common gloom. One wandering mass of mist had got caught between the main precipice and a noble aiguille that projects from it; and made this bastion of rock stand out much as the Aiguille de Dru hangs over the Mer de Glace. Here there was no ice, only patches of snow in the hollows of the crags. But the contrast of woods below and savage rock above was sufficient, and the glassy surface of the lake was beautiful as any ice-field.

In admiring the blue-black cloud we had forgotten what it was laden with. Suddenly the rain came down heavier than ever, and we were wet through before, descending swiftly through the woods, we could reach our night's quarters on the banks of the lake. The Galician Tatra-Union, one of the numerous Alpine clubs which have sprung up on the Continent during the last fifteen years, has erected a wooden hut to afford shelter to travellers in this the central and most striking point of the Polish mountain land. The society's funds being limited, the hut is small and rude, and the man who takes charge of it has seldom anything but eggs, bread, and rum to place before his visitors. We found that the best room, itself a poor one, had been bespoken for the Krakow party, which we had thrice passed on the way; they, like most Continental walkers, moving scarcely half as fast as Englishmen naturally do. But any shelter was welcome on such a night and in such a lonely, hungry spot; and as one of our guides, who could speak a little German, told us that he had brought a young English lady

and her father here two years before, when the hut-keeper was away, and no food to be had, and that she had enjoyed it, we could in no case have dared to murmur. Fortunately, our knapsacks contained some excellent tea, and we were able to return the kindness of two Polish tourists, whom we found already installed, by exchanging a share of our strong brew for their sugar and cold mutton. Soon the rectorial party arrived, and occupied, to the number of eight, the inner room, while we and the Poles stretched ourselves on the floor of the outer one, wrapped in plaids which had been kept passably dry, and sought to make the room and ourselves cheerful with rum toddy and fragrant smoke. There were some guides, porters, and miscellaneous people about, so the tiny hut must have covered more than twenty people that night. The Poles who had been astonished to hear that we were English — what should bring Englishmen here? — plied us with questions about politics. England has again become an object of interest to the quidnuncs, and, of course, all Polish ideas and feelings begin and end with hatred of Russia. They were specially curious about the British prime minister, whose nationality and literary antecedents distinguish him in their eyes from all other European statesmen. We indicated an unfavorable opinion. "But is he not, then, a great man?" they asked. One of the party gave a still more vigorous expression to his view of the premier's character. "Ach! you are Gladstonists," they replied; "that is why you don't like him." Then we told them that, of course, all Englishmen loved Poland, even the party which had always refused her a good word and a helping hand in past days, and presently we went to sleep in amity.

The lake, which the Poles call Rybie Staw and the Hungarians Halas tó (both names mean Fish Lake), is one of the largest in the Tatra, though it is really rather a tarn, being no bigger than Grasmere. The smaller one, lying on the shelf above, is Tengerszem (Polish, Morskióko; German, Meerauge), meaning the Eye of the Sea, from an odd fancy which the people have that it communicates with the ocean. You are gravely told by the peasants that, when the air is calm, waves rise on its surface, a phenomenon which must be caused by there being at that moment a storm raging in the Atlantic or the Baltic. I can only account for such a whimsical notion (which is entertained as regards some of the other Tatra lakes) by supposing that it is due to the depth of

the lake, which the people believe to be bottomless, and that it comes down from a time when the world was supposed to float on as well as in the circumambient ocean. Homer says somewhere that all rivers and springs and long watercourses issue from deep-flowing ocean; and this local belief may be a last trace of the oldest cosmogonies.

Next morning, a bright but nipping morning, after a plunge into the clear keen waters of Halas tó — to the amazement of the other travellers, who could not imagine why, when the air was so cold already, we should seek an even colder element — we set off to cross the main chain into Hungary. The first part of the way is through a valley of wild and wonderful loveliness. It is richly wooded, with sunny glades of pasture scattered here and there among the pines and birches, and the bright river flashing out from between the trees in long runs of foam and pools of quivering green. On each side inaccessible rock walls soar into the sky; and now and then, up some deep gully, one catches sight of a snowfield hidden far up under the highest tops. The outskirts of the Alps have nothing more beautiful. And indeed there is nothing in the Alps quite like this. For there the granite mountains lie in the middle of the chain, starting up from among glaciers and snow-fields. Here the aiguilles rise immediately out of pasture and forest. It is rather as if one should combine a foreground from the Bavarian Alps, with their exquisite woods and lawns, with a background of Norwegian rock. At one place we had to cross the river, and found the wooden bridge gone. The guides seized their axes — in this country every one carries an axe — and hewed down two trees long enough to span the stream, which they made firm by felling a third and laying it across the end, and so we safely crossed.

Out of these soft landscapes we mounted at length into the upper rock-land. Every valley in the Tatra has several successive floors or stages; each nearly level, and each separated from that above it by a steep ascent. In the highest floor of this glen lies a lakelet, the Frozen Lake, of singular beauty. All round are bare rocks, bearing neither a shrub nor a blade of grass. It is a scene of utter desolation, with no color save the grey or black of the mouldering granite. But the surface of the lake itself is covered by countless bergs and ice-floes, and among them the water sparkles with a blue brighter than that of the sky above. The sound of

waterfalls comes faintly up out of the glen below; the scream of the eagle from the crags, the shrill piping of the marmots close at hand, are heard in the stillness; white clouds sail through the air, and when a breeze stirs the lake, the tiny icebergs kiss one another and then float softly away. Just above this Frozen Lake the path climbs to the summit of the pass. It is a steep and rugged path, not dangerous, except from the risk of stones rolled down from above, but so difficult that we did not wonder at our guides' admiration for the spirit of the young English lady who had followed them across it "like a chamois." The top of the Polnischer Kamm ("comb" is a good name for these narrow crests), 7,208 feet above the sea, is a mere edge; and from it, standing with one foot in Hungary and the other in Galicia, and close under the loftiest and most savage of all the Tatra summits, you look through noble portals of rock far away into the lowland of both countries. It is but four hours' descent to Schmeks, the capital of the Hungarian Switzerland. But Schmeks, that quaint little oasis in the forest, with its own circle of lakes and valleys and excursions, its pleasant primitive ways, its baths and balls and politics — is a place of too much consequence in Hungarian eyes to be dealt with at the end of an article.

WITHIN THE PRECINCTS.

BY MRS. OLIPHANT.

CHAPTER XLIII.

OLD Captain Temple was an old soldier, whose habit it was to get up very early in the morning. He said afterwards that he had never got up so early as on that morning, feeling a certain pride in it, as showing the magical power of sympathy and tenderness. He woke before it was light. It had been raining in the night, and the morning was veiled with showers. When it did come it was white and misty. He was ready to go out before any one was stirring. Not a soul, not even the milkman, was astir in the Dean's Walk. The blinds were still down over his neighbors' windows. The only one drawn up he noticed in passing was Lottie's. Was she too early, like himself? The question went through his mind as he passed. Poor child! her life was not a happy one. How different, he could not help feeling, how different his own girl would have been

had she but been spared to them! He shook his white head, though he was all alone, wailing, almost remonstrating, with Providence. How strange that the blessing should be with those who did not know how to prize it, while those who did were left desolate! The captain's step rang through the silent place. There was no one about; the Abbey stood up grey and still with the morning mists softly bursting from about it, and here and there, behind and around, smoke rose from some homely roof, betraying the first signs of waking life. Captain Temple walked briskly to the slopes. There was his favorite walk. He made one or two turns up and down all the length of the level promenade, thinking about her — how often she had come with him here, but lately she had avoided him. He paused when he had made two or three turns, and leaned over the low parapet wall, looking down upon the misty landscape. The river ran swiftly at the foot of the hill, showing in a pale gleam here and there. The bare branches of the trees were all jewelled coldly with drops of rain. It began to drizzle again as he stood gazing over the misty wet champaign in the stillness of the early morning. He was the only conscious tenant of this wide world of earth and sky. Smoke was rising from the houses in the town, and a faint stir was beginning, but here on the hill there was no stir or waking movement, save only his own.

What was that? A sound. He turned round quickly — he could not tell what it was; was there some one about, some one else as early as himself? But he could see nobody. There was not a step nor a movement visible, but there was a sense of a human presence, a feeling of somebody near him. He turned round with an anxiety which he could not explain to himself. Why should he be anxious? but it pleased him afterwards to remember that all his sensations this morning were strange, un-called-for, beyond his own control. He peered anxiously about among the bushes and bare stems of the trees. At last it seemed to him that he saw something in the corner of the bank under the elm-tree. He turned that way, now with his old heart beating, but altogether unprepared for the piteous sight that met his eyes. She was so slim, so slight, her dress so heavy and clinging with the rain, that a careless passer-by might never have seen her. He hurried to the place with a little cry. Her head drooped upon the rough wooden back of the seat, her hands were wrapped in her cloak, nothing visible of her but a face as

white as death, and wet — was it with rain or with tears? Her eyes were closed, her long dark eyelashes drooping over her cheek. But for her frightful paleness she would have been like a child who had lost its way, and cried itself to sleep. "Lottie," cried the old man; "Lottie!" but she made no response. She did not even open her eyes. Was she sleeping, or, good God — He put his hand on her shoulder. "Lottie, Lottie, my dear child," he cried into her ear. When after a while a deep sigh came from her breast, the old man could have wept for joy. She was living then. He thought for a moment what was to be done; some help seemed indispensable to him; then rushed away down through the cloisters to the house of Mr. Ashford, which was one of the nearest. The minor canon was coming downstairs; he had something to do which called him out early. He paused in some surprise at the sight of his visitor, but Captain Temple stopped the question on his lips. "Will you come with me?" he cried; "come with me — I want you," and caught him by the sleeve in his eagerness. Mr. Ashford felt that there was that in the old man's haggard face which would not bear questioning. He followed him, scarcely able in the fulness of his strength to keep up with the nervous steps of his guide. "God knows if she has been there all night," the captain said. "I cannot get her to move. And now the whole place will be astir. If I could get her home before anybody knows! They have driven her out of her sweet senses," he said, gasping for breath as he hurried along. "I came for you because you are her friend, and I could trust you. Oh, why is a jewel like that given to those who do not prize it, Mr. Ashford, and taken from those that do? Why is it? why is it? they have broken her heart." The minor canon asked no questions; he felt that he too knew by instinct what it was. The rain had come on more heavily, small and soft, without any appearance of storm, but penetrating and continuous. The captain hurried on to the corner where he had left her. Lottie had moved her head; she had been roused by his first appeal from the stupor into which she had fallen; her eyes were open, her mind slowly coming, if not to itself, at least to some consciousness of the external world and her place in it. The instinct that so seldom abandons a woman, that of concealing her misery, had begun to dawn in her mind — the first sign of returning life.

"Lottie, Lottie, my dear child, you must

not sit here in the rain. Come, my pet, come. We have come to fetch you. Come to your mother, or at least to one who will be like a mother. Come, my poor dear, come home with me." The old man was almost sobbing as he took into his her cold hands.

Lottie did her best to respond. She attempted to smile, she attempted to speak mechanically. "Yes," she said hoarsely; "I will come — directly. It is — raining." Her voice was almost gone; it was all they could do to make out what she said.

"And here is a kind friend who will give you his arm, who will help you along," said Captain Temple. He stopped short — frightened by the change that came over her face; an awful look of hope, of wonder, woke in her eyes, which looked preternaturally large, luminous, and drowsy. She stirred in her seat, moving with a little moan of pain, and attempted to turn round to look behind her.

"Who is it?" she whispered. "Who is it? is it — you?"

Who did she expect it to be? Mr. Ashford, greatly moved, stepped forward quickly and raised her from her seat. It was no time for politeness. He drew her arm within his, not looking at her. "Support her," he said quickly to Captain Temple, on the other side. The minor canon never looked at Lottie as he half carried her along that familiar way. He did not dare to spy into her secret, he guessed at it. The hand which he drew through his arm held just a letter. He knew none of the steps which had led to this, but he thought he knew what had happened. As for Captain Temple, he did not do much of his share of the work; he held her elbow with his trembling hand, and looked pitifully into her face, knowing nothing at all. "My poor dear," he said, "you shall not go back — you shall not be made miserable. You are mine now. I have found you, and I shall keep you, Lottie. It is not like a stepmother that my Mary will be. My love, we will say nothing about it, we will not blame any one; but now you belong to me." What he said was as the babbling of a child to Lottie, and to the other who divined her; but they let him talk, and the old man seemed to himself to understand the position entirely. "They have driven her out of her senses," he said to his wife; "as far as I can see she has been out on the slopes all night, sitting on that bank. She will be ill, she must be ill — she is drenched to the skin. Think if it had been our own girl! But I

will never let her go into the hands of those wretches again."

No one of the principal actors in this strange incident ever told the story, yet it was known all through the Abbey precincts in a few hours—with additions—that Captain Despard's new wife had driven her stepdaughter out of the house by her ill-usage; turned her to the door, some said; and that the poor girl, distracted and solitary, had spent the night on the slopes, in the cold, in the rain, and had been found there by Captain Temple. "When we were all in our comfortable beds," the good people cried with angry tears, and an indignation beyond words. Captain Despard came in from matins in a state of alarm indescribable, and besought his wife to keep indoors, not to allow herself to be seen. No one in the house had known of Lottie's absence during the night. She was supposed to be "sulky," as Polly called it, and shut up in her own room. When she did not appear at breakfast, indeed, there had been some surprise, and a slight consternation, but even then no very lively alarm. "She's gone off, as she said she would," Polly said, tossing her head; and the captain had, though with some remorse and compunction, satisfied himself that it was only some escapade on Lottie's part, which would be explained by the post, or which Law would know about, or Mrs. O'Shaughnessy. Law had gone out early before breakfast. It was natural to suppose he would know, or still more likely that his sister had gone with him on some foolish walk, or other expedition. "I don't mean to hurt your feelings," Polly cried, "but I shouldn't break my heart, Henry, if they'd gone for good, and left us the house to ourselves." When Captain Despard came in from matins, however, the case was very different; he came in pale with shame and consternation, and ready to blame his wife for everything. "This is what has come of your impudence, and your low habits," he said; and Polly flew to arms, as was natural, and there was a hot and dangerous encounter. The captain went out, swearing and fuming, recommending her if she prized her own safety not to show herself out of doors. "You will be mobbed," he said; "and you well deserve it."

"I'm going to put my hat on," said Polly, "and let them all see what a coward you are, as won't stand up for your wife." But when he had slammed the door emphatically after him, Polly sat down and had a good cry and did not put on her hat. Oh, what a foolish thing it is,

she repeated, to marry a man with grown-up children! It was *nature*, and not anything she had done that was in fault.

Lottie made no resistance when she found herself in Mrs. Temple's care. To have her wet things taken off, to have a hundred cares lavished upon her, as she lay aching and miserable in the bed that had been prepared for her, soothed her at least, if they did nothing more. Chilled in every bit of her body, chilled to her heart, the sensation of warmth, when at last it stole over her, broke a little the stony front of her wretchedness. She never knew how she had passed that miserable night. The fabric of her happiness had fallen down on every side, and crushed her. Her heart had been so confident, her hopes so certain. She had not doubted, as other girls so often do, or even thought it within the compass of possibility that Rollo could fail her. How could she suppose it? and, when it came, she was crushed to the ground. The earth seemed to have opened under her feet; everything failed her when that one thing in which all her faith was placed failed. She had sat through the darkness, not able to think, conscious of nothing but misery, not aware how the time was passing, taking no note of the coming of the evening or the night, the bewildering chimes from the Abbey of hour after hour and quarter after quarter. Quarter or hour, what did it matter to her? what did she know of the hurrying, flying time, or its stupefying measures? It began to rain, and she did not care. She cared for nothing—not the cold, nor the dark, nor the whispering of the night wind among the bare branches, the mysterious noises of the night. The pillars of the earth, the arch of the sweet sky had fallen. There was nothing in all the world but dismal failure and heart-break to Lottie. In the long vigil it seemed to fade out of her mind even what the cause was of this horrible downfall. The pain in her heart, the oppression of her brain, the failing of all things—hope, courage, faith—was all she was aware of. Rollo—her thoughts avoided his name, as a man who is wounded shrinks from any touch, and at last every thing had fallen into one stupor of misery. That it was the night which she was spending there, under the dark sky, just light enough to show the darker branches waving over it, the rain falling from it, Lottie was unconscious. She had nowhere to go, she had no wish to go anywhere; shelter was indifferent, and one place no more miserable than another. When Captain Temple roused her, there came

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vaguely to her mind a sense that her feelings must be hid, that she must try to be as other people, not betraying her own desolation; and this was the feeling that woke feebly in her when Mrs. Temple took her place by the bedside where Lottie was lying. She tried to make some feeble excuse, an excuse which in the desperation of her mind did not sound so artificial as it was. "I give you a great deal of trouble," she faltered.

"Oh, my dear," said Mrs. Temple, with tears, "do not say so; let me do what I can for you — only trust in me, trust in me."

Lottie could not trust in any one. She tried to smile. She was past all confidences, past all revelation of herself or her trouble. And thus she lay for days, every limb aching with the exposure, her breathing difficult, her breast throbbing, her heart beating, her voice gone.

Down-stairs there was many an anxious talk over her between the three most intimately concerned. The old captain held by his single idea that she had been driven from home by her stepmother, that idea which all the Abbey had adopted. The minor canon was not of that opinion. He came every day to ask for the patient, and would sit and listen to all they could tell him, and to the captain's tirades against Polly. "I think there was something more than that," he would say. And Mrs. Temple looked at him with a look of understanding. "I think so too," she said. Mrs. Temple had disengaged out of Lottie's cold hand the letter which she had been grasping unawares. She had not been able to resist looking at it, telling herself that she ought to know what was the cause. These two alone had any idea of it, and no one spoke to Lottie, nor did she speak to any one of the cause of her vigil. She lay in a silent paradise of warmth and rest, cared for and watched at every turn she made, as she had never been in her life before. And by degrees the pain stole out of her limbs, her cough was got under, and the fever in her veins subdued. Of two things only Lottie did not mend. Her heart seemed dead in her bosom, and her voice was gone. She could neither sing any more, nor be happy any more. These are things which neither doctor nor nurse can touch, but for all the rest her natural health and strength soon triumphed. Her brain, which had tottered for a moment, righted itself and regained its force. She had no fear, though everybody expected it. She did not fall into "a decline," as was universally thought.

She got better, but she did not get happy, nor did she recover her voice. When she was able to be brought down-stairs, the good people who had taken her up made a little fête of her recovery. Mr. Ashford was asked to dinner, and the room was filled with flowers, rare hot-house flowers, on which the old captain had spent a great deal more than he could afford to spend. "To please the poor child, my dear," he said apologetically; and Mrs. Temple had not a word to say. She winced still when in his simple way he would speak of "our own girl," but in her heart she made a kind of religion of Lottie, feeling sometimes, poor soul, as if she was thus heaping coals of fire, whatever they may be, upon the head — though it might be blasphemy to put it into words — of Him who had bereaved her. He had taken her child from her, and she had been angry, and perhaps had sinned in the bitterness of her grief; but now here was a child who was his — for are not all the helpless his? whom she would not cast from her, whom she would take to her bosom and cherish, to show him (was it?) that she was more tender than even the Father of all. "Thou hast taken mine from me, but I have not closed my heart to thine," was what all unawares the woman's heart said, for she was angry still, being a mother, and unable to see why she should have been bereaved.

A few days after Lottie had begun to be brought down-stairs (for this was done without any will of hers), a visit was paid to her which had no small effect upon her life. She was seated in the invalid's place near the fire, a little table by her side with flowers on it, and a new book, and *Punch*, and the illustrated papers, all the little innocent *gâteries* of which the old captain could think, the trifles which make the days of a happy convalescent sweet, and which Lottie tried hard to look as if she cared for; and with Mrs. Temple near her, watching her to see lest she should be too warm or too cold, lest she should want anything, with the anxious care of a mother. There was a prancing of horses outside the door, a tremendous knock, a rustle of silk, and wafting of perfume, and the door was opened and Mrs. Daventry announced. Augusta came in with a swoop which filled Mrs. Temple's little drawing-room. There did not seem room for its legitimate inmates in that redundant presence. Mrs. Temple ran to her patient, thinking Lottie was about to faint, but she moved herself enough to smile faintly at Augusta when she spoke, which was as much as she did to any one. Augusta seated herself oppo-

site the pale convalescent, her train falling round her in heavy masses — the one all wealth and commotion and importance, the other so pale, so slight in her weakness, her brown merino dress hanging loosely upon her. Mrs. Temple was not made much account of by the fine lady, who made her a slight salutation, half bow, half curtsy, and took no further notice of "the people of the house."

"Well," she said, "how are you, and what has been the matter? There are the most extraordinary stories told about you. I have come to find out what is really the matter, Lottie. Mamma wishes to know, too. You know you were always a kind of favorite with mamma."

"I will tell you about her illness," said Mrs. Temple. "She is scarcely well enough yet to enter into details."

"Oh," said Augusta, gazing blankly upon the "person of the house," — then she returned to Lottie again. "I don't want you to enter into details, but they say the most extraordinary things; they say you were turned out of doors, and stayed all night on the slopes — that, of course, can't be true — but I wish you would tell me what is true, that I may give the right version of the story. Mamma is quite anxious to know."

"Lottie, my dear, I will tell Mrs. Daventry," said Mrs. Temple, "it is too much for you;" and she held her point and recounted her little story with a primness which suited her voice and manner. Many were the demonstrations of impatience which the fine lady made, but it was not in her power to struggle against Mrs. Temple's determination. She turned to Lottie again as soon as the tale was told.

"Is that true? Only a very bad cold and influenza from getting wet? Oh, we heard a great deal more than that; and your voice — we heard you had quite lost your voice. I promised the signor to inquire. He is quite anxious, he always thought so much of your voice. He is an odd man," said Augusta, giving a blow in pausing; "he thinks so differently from other people about many things. I promised to find out for him all about your voice. Have you really, really lost your voice, as everybody says?"

It was curious that Lottie, who had never been concerned about her voice, who had never cared anything about it, who had not wanted to be a singer at all, or to give her talent any powerful part in her life, should feel, even in the midst of the greater and deeper unhappiness that possessed her, a distinct sting of pain as she

heard this question. Her paleness was flushed with a sudden painful color. She looked at Mrs. Temple wistfully again.

"You can hear that she is hoarse," said Mrs. Temple; "a very common consequence of a cold. She has lost her voice for the moment, but we hope to find it again."

"I think she must be dumb altogether, as she never answers me," said Augusta fretfully. Then she tried another subject, with a triumphant certainty of success. "I don't know if you have heard of our trouble," she said, looking at her black dress. "You remember, Lottie, my cousin, Mr. Ridsdale. Oh, yes; you knew him a little, I think."

Once more Lottie's pale face flushed with painful, overwhelming color. She looked up with alarmed and troubled eyes.

"Oh, I see you remember him; he was such a great flirt, he was always making himself agreeable to women. It did not matter who they were," said Augusta, fixing her eyes on her victim's face, "or what class of people, so long as they were at all nice-looking, or could sing, or draw, or anything. I remember I sent him out to try whether he could not hear you singing, the very day I was married. He was another of the people who believed in you, Lottie. He did not hear you then, so he made mamma ask you, you remember. He had something to do with a new opera company, and he was always on the lookout for a new voice."

Once more Lottie turned her eyes upon Mrs. Temple, eyes full of anguish and wonder. Who else could she turn to? — not to the cruel executioner who sat opposite to her, with a lurking smile about her heartless mouth. How cruel a woman can be with a fair face, and no signs of the savage in her! Augusta saw that her arrow had struck home, and was encouraged to do more.

"Oh, yes; he was in a great state about your voice. He said it would make his fortune and yours too. He was always ridiculously sanguine. You know how he used to flatter you, Lottie, and go to all your lessons. Oh, you must not tell me that you don't remember, for I could see you liked it. Well," said Augusta, who did not lose a single change of color, no quiver of her victim's lips, or flutter of her bosom, "that sort of thing is all over now. Oh, I daresay he will continue to take a great interest as an amateur, but his position is now entirely changed. My poor cousin Ridsdale, Rollo's eldest brother, was killed in the hunting-field about a fort-

night ago. Such a shock for us all! but it has made a great change for Rollo. He is Lord Ridsdale now, and my uncle Courtland's heir. His servant came last Friday week to fetch some things he had left at the Deanery, for he had gone away for the day only, not knowing what had happened. Poor fellow! and yet, of course, though he was truly grieved and all that, it is great good fortune for him. We are not likely *now*," Augusta added with a faint smile, "to see much of him here."

Lottie did not say a word. She sat, no longer changing color, perfectly pale, with the great blue eyes, that had so expanded and dilated during her illness, fixed upon the vacant air. To hear him named was still something, and filled her with a sick excitement, an anguish of interest and agitation. After the long silence, after the cutting of all ties, after his cruel desertion of her, after the blow which had all but killed her, to hear of him had been something. Pain—yet a pain she was more eager to undergo than to meet any pleasure. But Lottie had not calculated upon the cruel, treacherous, yet careless blow which fell upon her now, upon her quivering wounds. To hear her voice, was that what it was? not to see her because he loved her, but to hear her singing. Till now she had at least had her part. He was false, and had forsaken her, she knew, but sure he had loved her; the Rollo who gazed up in the moonlight at her window had still been hers, though another Rollo had betrayed her trust and broken her heart. But now! the blood ebbed away from her face, and seemed to fail from her heart: the beating of it grew confused and muffled in her ears. She gazed with her great eyes, all strained and pained with gazing, at nothing. To hear her sing, not seeking her, but only running after a new voice! She sat with her hands clasped upon her lap in a kind of piteous appeal, and sometimes would look at the one and then the other, asking them—was it true, could it be true?

"I must go," said Augusta, having fired her shot; "and I am glad to hear such a good account of you. Only a bad cold, and a hoarseness, such as is quite common. Mamma will be pleased to hear, and so will the signor. I can't tell anything about your voice, because you have not let me hear it, Lottie. Oh, quite prudent—much the best thing not to use it at all, though with an old friend, to be sure. You look rather ill, I am bound to say."

Lottie sat still in the same attitude after this cruel visitor was gone, all her

thoughts going back upon that time, which after all was only a few months, yet which seemed her life. She had given him up, or rather she had accepted her abandonment without a struggle, without a hope; it had been to her as a dream out of heaven. She had not even blamed him. It had killed her, she thought. She had not resisted, but it had killed her. Now, however, she could not submit. In her heart she fought wildly against this last most cruel blow. He was not hers, he was cut off from her, by his own murderous hand; but to give up the lover who had loved her before he knew her, who had watched under her window and wiled her heart away, that she could not do. She fought against it passionately in her soul. The afternoon went on without a sound, nothing but the ashes softly falling from the fire, the soft movement of Mrs. Temple's arm as she worked; but the silence tingled all the time with the echo of Augusta's words, and with the hot conflict of recollections in her own heart opposing and denying it. Mrs. Temple worked quietly by, and watched, divining something of the struggle, though she did not know what it was. At last all at once in the stillness the girl broke forth passionately: "Oh, no, no," she cried, "not that. I will not believe it. Not that; it is not true."

"What is not true, dear, tell me?" her companion said, laying down her work, and coming to her with tender hands outstretched, and pity in her eyes.

"You heard her," Lottie said, "you heard her. That it was to hear me singing—that it was all for my voice. No, no, not that. It could not be—that was not true. You could not believe *that* was true."

And Lottie looked at her piteously clasping her hands, entreating her with those pathetic eyes for a little comfort. "Not that, not that," she said. "My singing, was it likely? Oh, you cannot think *that*!" she cried.

Mrs. Temple did all she could to soothe her. "My poor child, it is all over, it is indeed—what does it matter now?"

"It matters all the world to me," Lottie cried. Kind as her new guardian was, she could not understand that even when her happiness and her hopes were all crushed, it was a bitterness more exquisite, a sting the girl could not bear, to believe that her foundations had been sand, that she had been deluded from the beginning, that the love she trusted in had never been. This sting was so keen and sharp that it woke her from the apathy of despair that was

creeping over. She was roused to struggle, to a passion of resistance and denial. "How can any one but me know how it was? It all came from that, without that I should never have thought, we should never have met. It was the beginning. How can any one know but me?" she cried, contending as against some adversary. When the first strain of this conflict was over, she turned faltering to her kind guardian. "I had a letter," she said; "it was the letter. I cannot find it." She gave her a look of entreaty which went to Mrs. Temple's heart.

"I have got your letter, Lottie. I have it in my desk put away. No one has seen it. Let me put it into the fire."

"Ah, no! perhaps there may be something in it, different from what I thought."

She held out her hands supplicating, and Mrs. Temple went to her desk and took out an envelope. Within was something all stained and blurred. The rain had half washed the cruel words away. Once for all, as Rolio's last act and deed, and suicidal exit from this history, this letter shall be copied here. Imagine how Lottie had been sitting, all happiness and soft agitation and excitement, waiting for him when his curt epistle came:—

"MY DEAR LOTTIE,—An extraordinary change has happened in my life—not my doing, but that of Providence. It gives me new duties, and a new existence altogether. What we have been thinking of cannot be. It is impossible in every way. For me to do what I promised to you was when we parted a sacrifice which I was willing to make, but now is an impossibility. I am afraid you will feel this very much, and don't think I don't feel it; but it is an impossibility. I have things to do and a life to lead that makes it impossible. I hope soon some one will be raised up for you when you want it most, to give you the help and assistance I would so gladly have given. Could I but know that you assented to this, that you saw this reason for my conduct, I should be as happy as I now can ever be, and I hope that you will do so when you can look at it calmly. Farewell, dear Lottie, think of me with as little anger as you can, for it is not I but Providence. Your voice will soon make you independent of me. It is only a momentary disappointment I know, and I cannot help it. To do what we settled to do is now an impossibility—an impossibility. Dear Lottie, farewell!

R. R."

Underneath, *forgive me* was scrawled hastily as if by an afterthought.

In the calm warm room, in the dull afternoon, under the eyes of her tender nurse, Lottie read over again this letter, which she had read with incredulous wonder, with stupefying misery, by the dim light of the evening under the black waving branches of the leafless trees. She gave a cry of anguish, of horror, of indignation and shame, and with trembling hands folded it up, and put it within its cover and thrust it back to Mrs. Temple's keeping. "Oh, take it, take it," she cried wildly—"keep it, it has killed me. Perhaps—perhaps! the other is true too."

CHAPTER XLIV.

LAW had been living a busy life at the time of that crisis and climax of his sister's existence. He had spent day after day in London, lost in that dangerous and unaccustomed delight of spending money, which is only tasted in its full flavor by those who are little accustomed to have any money to spend. Law was tempted by a hundred things which would have been no temptation at all to more experienced travellers—miracles of convenience and cheapness, calculated to smooth the path of the emigrant, but which were apt on being bought to turn out both worthless and expensive—and many a day the young fellow came home penitent and troubled, though he started every morning with an ever-renewed confidence in his own wisdom. Lottie's sudden illness had checked these preparations in mid-career. He had lost the ship in which he meant to have made his voyage, and though he bore the delay with Christian resignation, it was hard to keep from thinking sometimes that Lottie could not have chosen a worse moment for being ill—a little later, or a little earlier, neither would have mattered half so much—but at the very moment when he was about to sail! However, he allowed impartially that it was not his sister's fault, and did not deny her his sympathy. Law, however, had never been satisfied about the cause of her illness. He did not know why she should have sat out on the slopes all night. Polly—he refused the idea that it was Polly. Mrs. Despard was bad enough, but not so bad as that; nor did Lottie care enough for the intruder to allow herself to be driven out in this way. But Law kept this conviction to himself, and outwardly accepted the story, not even asking any explanation from his sister. Whatever was the real reason, it was no doubt the same cause which kept

her from listening to him when he had tried to tell her of the new step in his own career, and the unexpected liberality of the minor canon. "If it had but been her!" Law said to himself—for indeed he, who knew the value of money, never entertained any doubt as to Mr. Ashford's meaning in befriending him; he was a great deal more clear about this than Mr. Ashford himself.

He lost his passage by the ship with which he had originally intended to go. It was a great disappointment, but what could he do? He could not start off for the antipodes when his sister might be dying. And as for his own affairs, they had not come to any satisfactory settlement. Instead of saying yes or no to his question to her, Emma, when he had seen her, had done everything a girl could do to make him change his intention. To make *him* change his intention!—the very idea of this filled him with fierce scorn. It was quite simple that she should make up her mind to leave everything she cared for—for love of him; but that he should change his purpose for love of her was an idea so absurd that Law laughed at the simplicity of it. As well expect the Abbey tower to turn round with the wind as the weathercock did. But yet Law did not object to stroll down to the River Lane in the evenings, when he had nothing else to do, sometimes finding admission to the work-room when the mother was out of the way, demanding to know what was Emma's decision, and smiling at her entreaties. She cried, clasping her hands with much natural eloquence, while she tried to persuade him. But Law laughed.

"Are you coming with me?" he said—he gave no answer to the other suggestion—and by this time he had fully made up his mind that she did not mean to come, and was not very sorry. He had done his duty by her—he had not been false, nor separated himself from old friends when prosperity came. No one could say that of him. But still he was not sorry to make his start alone—to go out to the new world unencumbered. Nevertheless, though they both knew this was how it would end, it still amused Law in his unoccupied evenings to do his little love-making at the corner of the River Lane, by the light of the dull lamp, and it pleased Emma to be made love to. They availed themselves of this diversion of the moment, though it often led to trouble, and sometimes to tears; and Emma for her part suffered many scoldings in consequence. The game, it is to be supposed,

was worth the candle, though it was nothing but a game after all.

On the day after Mrs. Daventry's visit, Lottie sent for her brother. He found her no longer a languid invalid, but with a fire of fervid energy in her eyes.

"Law," she said, "I want you to tell me what you are going to do. You told me once, and I did not pay any attention. I had other—other things in my mind. Tell me now, Law."

Then he told her all that had happened, and all he had been doing. "It was all your sense, Lottie, after all," he said. "You were always the one that had the sense. Who would have thought when I went to old Ashford to be coached, that he would come forward like this, and set me up for life? nor he wouldn't have done that much either," Law added, with a laugh, "but for you."

"Law," cried Lottie, with that fire in her eyes, "this was what we wanted all the time, though we did not know it. It was always an office I was thinking of—and that I would be your housekeeper—your servant if we were too poor to keep a servant; but this is far better. Now we are free—we have only each other in the world. When must we go?"

"We!" cried Law, completely taken aback. He looked at her with dismay. "You don't mean you are coming? You don't suppose I—can take you."

"Yes," she cried, "yes," with strange vehemence. "Were we not always to be together? I never thought otherwise—that was always what I meant—until—"

"Ah," said Law, "that is just it—until! When you're very young," he continued, with great seriousness, "you think like that—yes, you think like that. A sister comes natural—you've always been used to her; but then, Lottie, you know as well as I do that don't last."

"Oh, yes—it lasts," cried Lottie, "other things come and go. You suppose you want something more—and then trouble comes, and you remember that there is nobody so near. Who could be so near? I know all you like and what is best for you, and we have always been together. Law, I have had things to make me unhappy—and I have no home, no place to live in."

"I thought," said Law severely, "that they were very kind to you here."

"Kind! it is more than that," cried Lottie, her hot eyes moistening. "They are like—I do not know what they are like—like nothing but themselves; but I do not belong to them. What right have I to be

here? and oh, Law, you don't know — To walk about here again — to live, where one has almost died — to see the same things — the place — where it all happened —”

Lottie was stopped by the gasp of weeping that came into her throat. She ended with a low cry of passionate pain. “I must go somewhere. I cannot stay here. We will go together, and work together; and some time, perhaps — sometime — we shall not be unhappy, Law.”

“I am not unhappy now,” said the young man. “I don't know why you should be so dismal. Many a fellow would give his ears to be in my place. But you — that's quite a different thing. A man can go to many a place where he can't drag his sister after him. Besides, you've got no outfit,” cried Law, delighted to find so simple a reason, “and no money to get one. Old Ashford has been awfully kind; but I don't think it would be nice to draw him for an outfit for you. It wouldn't be kind,” said Law, with a grin, “it would be like the engineer fellow in Shakespeare — burst with his own boiler. You know that would never do.”

“A woman does not need an outfit, as a man does,” said Lottie; “a woman can put up with anything. If you go away, what is to become of me? When you are young, whatever you may have had to make you unhappy, you cannot die when you please. That would be the easiest way of all — but it is not possible; you cannot die when you please.”

“Die — who wants to die?” said Law. “Don't you know it's wicked to talk so? Why, there's your singing. You'll be able to make a great deal more money than I ever shall; and of course you may come over starring to Australia when you're a great singer, but it would be ruin to you now to go there. Don't be carried away by it because I'm lucky just now, because it's my turn,” he said; “everybody wants to hold on by a fellow when he's in luck — but it is really you who are the lucky one of the family.”

“My voice is gone,” said Lottie, “my home is gone. I have nothing in the world but you. All I used to have a little hope in is over. There are only two of us in the world, brother and sister. What can I do but go with you? I have nobody but you.”

“Oh, that's bosh,” said Law, getting up from his seat in impatience. “I don't believe a word they say about your voice. You'll see it'll soon come back if you give it a chance; and as for having nobody but

me, I never knew a girl that had so many friends — there's these old Temples, and heaps of people; and it seems to me you may marry whoever you like all round. A girl has no right to turn up her nose at that. Besides, what made old Ashford so kind to me? You don't find men doing that sort of thing for nothing in this world. I always think it's kindest to speak out plain,” said Law, reddening, however, with a sense of cruelty, “not to take you in with pretending. Look here, Lottie. I can't take you with me. I have got no more than I shall want for myself, and I may have to knock about a great deal there before I get anything. And to tell the truth,” said Law, reddening still more, “if I was to take a woman with me, it would be more natural to take — some one else. A fellow expects to marry, to make himself comfortable when he gets out there. Now you can't do that if you have a sister always dragging after you. I've told you this before, Lottie — you know I have. I don't want to hurt your feelings when you've been ill — but what can a fellow do? To say what you mean once for all, that is the best for both you and me.”

Law made his exit abruptly when he had given forth this confession. He could say what was necessary boldly enough, but he did not like to face his sister's disappointment. It was a comfort to him to meet Mr. Ashford at the door.

“Lottie is up-stairs,” he said. “She wants me to take her with me, but I have told her I can't take her with me. I wish you would say a word to her.”

Law rushed away with a secret chuckle when he had sent to his sister a new suitor to console her. If one lover proves unsatisfactory, what can be better than to replace him by another? Law felt himself bound in gratitude and honor to do all that he could for Mr. Ashford, who had been so kind to him; and was it not evidently the best thing — far the best thing for Lottie too?

The minor canon went up-stairs with a little quickening of his pulse. He had been a great deal about Captain Temple's little house since the morning when he had brought Lottie there, and her name and the thought of her had been in his mind constantly. He had not defended himself against this preoccupation, for would it not have been churlish to put the poor girl out of his mind when she was so desolate, and had no other place belonging to her? Rather he had thrown open all his doors and taken in her poor pale image, and made a throne for her, deserted, helpless,

abandoned as she was. A generous soul cannot take care of itself when a friend is in trouble. Mr. Ashford, who had been on the edge of the precipice half consciously for some time, holding himself back as he could, thinking as little about her as he could, now let himself go. He felt as the Quixotes of humanity are apt to feel, that nothing he could give her should be withheld now. If it did not do her any good, still it would be something—it was all he could do. He let himself go. He thought of her morning and night, cherishing her name in his heart. Poor Lottie—life and love had alike been traitors to her. "Though all men forsake thee, yet will not I," he said, as once was said rashly to a greater than man. What could he ever be to her, wrung as her heart was by another? but that did not matter. If it was any compensation to her, she should have his heart to do what she liked with. This was the sentiment in the mind of the minor canon, who ought, you will say, to have known better, but who never had been practical, as the reader knows. He went up-stairs with his heart beating. How gladly he would have said a hundred words to her, and offered her all he had, to make up for the loss of that which she could not have! But what his generosity would have thrown at her feet, his delicacy forbade him to offer. Lottie, in her disappointment and desertion (which he only divined, yet was certain of), was secured to him. Mrs. Temple was absent about her household concerns, and there was nobody in the drawing-room up-stairs except Lottie, who in her excitement and despair did not hear his step, nor think that any one might be coming. She was walking about the room, with her hands clasped and strained against her breast, her rather weak steps full of feverish energy, her eyes glowing with a fire of despair. "What shall I do? what shall I do?" she was moaning in the anguish of her heart.

When Ernest Ashford opened the door, her back was turned to it, so that he heard this moan, and saw the passionate misery of her struggle, before she knew that he was there. When she saw him a momentary gleam of anger came over her face; then she put force upon herself, and dropped her hands by her side like a culprit, and tried to receive him as she ought. As she ought—for was not he her brother's benefactor, whom all this time she had been neglecting, not thanking him as he had a right to be thanked? The change from that anguish and despair which she

had been indulging when alone, to the sudden softening of courtesy and compunction and gratitude which, after a pathetic momentary interval of struggling with herself, came over her face, was one of those which had transported Rollo in the beginning of their acquaintance by its power of expression. But this change, which would have pleased the other, went to the heart of the minor canon, to whom Lottie had never appeared in the light of an actress or singer, but only as herself.

"Mr. Ashford," she said faintly. "I wanted to see you—to thank you—"

She was trembling, and he came up to her tenderly—but with a tenderness that never betrayed its own character—grave and calm; for all that his heart was beating—and took her hand and arm into his, and led her to her chair. "You must not thank me for anything," he said.

"For Law—"

"No; not for Law. If it would give you any ease or any comfort, you should have everything I have. That is not saying much. You should have all I can do or think," he said, with a thrill in his voice, which was all that betrayed his emotion. "The misery of human things is that all I can do is not what you want, Lottie—and that what you want is out of my power."

He asked no permission to call her by her name; he was not aware he did it—nor was she.

"I want nothing," she said, with a passionate cry. "Oh, do not think I am so miserable and weak. I want nothing. Only, if Law could take me with him—take me away—to a new place—to a new life."

He sat down beside her, and softly pressed the hand which he held in his own. Yes, this was the misery of human things, as he said—he did not repeat the words, but they were in his face. That which she wanted was not for her, nor was his desire for him; other gifts might be thrown at their feet, and lie there unheeded, but not that for which they wished.

"Do you think it must not be?" she said. Lottie was willing to make him the judge of her fate—to decide for her how it was to be. Yes, but only in that way in which he was powerless. He smiled, with a sense of this irony, which is more tragic than any solemn utterances of fate.

"I do not think it could be," he said, "except with perfect consent and harmony, and Law—does not wish it. He is like the rest of us. He does not care for what he can have, though another man

might give his life for it. It is the way of the world."

"I am used to it," said Lottie, bowing her head; "you need not say it is the way of the world to break it to me, Mr. Ashford. Oh, how well I ought to do! I am used to being rejected. Papa, and Law, and —"

She put her hand over her hot eyes, but she did not mean to drop into self-pity. "Nobody cares to have me," she said, after a moment, with the quiver of a smile on her lips. "I must make up my mind to it — and when you are young you cannot die whenever you please. I must do something for myself."

"That is it," said the minor canon bitterly — "always the same; between those you love and those that love you there is a great gulf; therefore you must do something for yourself."

She looked at him wondering, with sad eyes. He was angry, but not with her — with life and fate; and Lottie did not blush as she divined his secret. It was too serious for that. It was not her fault or his fault; neither of them had done it or could mend it. Had she but known! had he but known! Now there was nothing to be done but to unite what little wisdom they had over the emergency, and decide what she was to do — for herself. Her father had no place for her in his house. Law could not have her with him; her lover had forsaken her; and to those who would have had her, who would have cherished her, there was no response in Lottie's heart. Yet here she stood with her problem of existence in her hands, to be solved somehow. She looked piteously at the man who loved her, but was her friend above all, silently asking that counsel of which she stood so much in need. What was she to do?

Just then the door opened, and Mrs. Temple came in with Dr. Enderby, who had been kind to Lottie, as they all were, and also regulated everybody's health within the precincts, from Lady Caroline downward. The good doctor, who had daughters of his own, looked with kind eyes upon the girl, who was so much less happy than they. He took her slender wrist into his hand, and looked into her luminous, over-clear eyes, wet with involuntary tears.

"She is looking a great deal better. She will soon be quite herself," he said cheerfully, but winked his own eyelids quickly, to throw off something which was involuntary too.

"Yes, yes," said Captain Temple, who had come in after him. "She will soon

be quite herself; but you must give her her orders to stay with us, doctor. We want to be paid for nursing her — and now she will be able to run about all our errands, and save us a great deal of trouble, and keep us happy with her pretty voice and her singing. Did you ever hear her singing, doctor? The signor is very anxious about her. We must begin our lessons again, my pretty Lottie, as soon as ever the doctor gives leave."

Dr. Enderby looked very grave. "There is no hurry about that," he said, "let her have a little more time. The signor must be content to wait."

Now Lottie had said, and they all had said, that her voice was gone; but when the doctor's face grew so grave, a cold chill struck to their hearts. She gave him a startled look of alarmed inquiry, she who had suddenly realized, now that all dreams were over, that question of existence which is the primitive question in this world. Before happiness, before love, before everything that makes life lovely, this mere ignoble foundation of existing must come. When one is young, as Lottie said, one cannot die at one's own pleasure — and suddenly, just as she had got to realize that necessity, was it possible that this other loss was really coming too? She looked at him with anxious eyes, but he would not look at her, to give her any satisfaction; then she laid her hand softly on his arm.

"Doctor," she said, "tell me true — tell me the worst there is to tell. Shall I never have my voice again? is it gone, gone?"

"We must not ask such searching questions," said the doctor, with a smile. "We don't know anything about never in our profession. We know to-day, and perhaps to-morrow — something about them — but no more."

He tried to smile, feeling her gaze upon him, and made light of her question. But Lottie was not to be evaded. All the little color there was ebbed out of her face.

"Shall I never sing again?" she said. "No — that is not what I mean; shall I never be able to sing as I did once? Is it over? Oh, doctor, tell me the truth, is that over too?"

They were all surrounding him with anxious faces. The doctor got up hurriedly and told them he had an appointment. "Do not try to sing," he said, "my dear," patting her on the shoulder. "It will be better for you, for a long time, if you do not even try;" and before any one could speak again he had escaped, and was hurrying away.

When he was gone, Lottie sat still, half stupefied, yet quivering with pain and the horror of a new discovery. She could not speak at first. She looked round upon them with quivering lips, and great tears in her eyes. Then all at once she slid down upon her knees at Mrs. Temple's feet.

"Now all is gone," she said, "all is gone,—not even that is left. Take me for your servant instead of the one that is going away. I can work—I am not afraid to work. I know all the work of a house. Let me be your servant instead of the one who is going away."

"Oh, Lottie, hush, hush! are you not my child?" said Mrs. Temple, with a great outcry of weeping, clasping her shoulders, and drawing the upturned face to her breast. But Lottie insisted gently, and kept her position. In this thing at least she was not to be balked.

"Your servant," she said, "instead of the one that is going away. I am an honest girl, though they all cast me off. I cannot sing, but I can work—your servant, or else I cannot be your child."

CHAPTER XLV.

CONCLUSION.

If this history had proposed to settle and bring to a dramatic conclusion even one single human life, the writer would falter here, feeling her task all unfulfilled, for what have we been able to do more than to bring our poor Lottie at the end of all things to a kind of dead-lock of all the possibilities of life? Such stoppages in the course of human affairs are, however, at least as common as the more natural climax or catastrophe. For one girl or boy whose life lies all fair before them after the first effort, how many are there who have to leave the chapter incomplete, and, turning their back upon it, to try a second beginning, perhaps with less satisfaction, and certainly with a somewhat disturbed and broken hope! Lottie Despard had arrived at this point. Her love had not ended as happy loves end. It had been cut short by a cruel hand; her fabric of happiness had fallen to the ground; her visionary shelter, the house of her dreams, had crumbled about her, leaving nothing but bare walls and broken rafters. Her misery and dismay, the consternation of her young soul when, instead of that fair and pleasant future which was to be her resting-place forever, she found around her a miserable ruin, we have not attempted to say. What words can tell such a convulsion and

rending of earth and sky? She had believed in her lover, and in her love as something above the weakness of ordinary humanity. She had believed herself at last to have found in him the ideal after which she had sighed all her life. His generous ardor to help her whenever he found her in want of help, the enthusiasm of a love which she believed had been given at first sight, like the love the poets tell of, had filled Lottie's heart with all the sweetness of a perfect faith. Impossible to say how she had trusted in him, with what pure and perfect delight and approbation her soul had given itself up to him, glad beyond all expression not only to find him hers, but to have found him at all, the one man known to her for whom no excuse had to be made. The discovery that he was in turn never but a traitor killed her morally—at least it seemed so to the poor girl when, all crushed and bleeding from a hundred wounds, she was taken to the house of her friends. But even that was scarcely a more horrible blow than the stroke administered delicately by Augusta while still the injured soul had not staunchd its own bleeding or recovered from the first mortal overthrow. The earth that had been so solid opened round her in yawning mouths of hell, leaving no ground to stand upon. There was nothing that was not changed. She had not only lost her future, which was all happiness, and in which she had believed like a child, but she had lost her past. She had been deceived; or, worse still, she had deceived herself, seeking her own downfall. The knowledge that it had not been love that brought Rollo under her window first, that it was altogether another sentiment, becoming even for his own interests, seemed to throw upon herself the blame of all that came after. Soul and heart, the girl writhed under the consciousness of having thus anticipated and brought on her fate. So vain, so foolish, so easily deceived, who was in fault but herself? Those thoughts gave her a false strength, or feverish impassioned power for a time. It was her own doing. She had been the deceiver of herself.

And who would deliver her from the dying pangs of love in her heart, those longings which are unquenchable, those protestations of nature against love, those dreams of excuses that might still be made, and gusts of impossible explanation which in her mind she knew to be impossible even while her fancy framed them? Sometimes Lottie would find her-

self dreaming unawares that some one else, not Rollo, had written that cruel letter; that it was not by his will he had left her to bear the brunt of her disappointment under the elm-tree; that it was a forgery, and he detained by some act of cruel treachery and deceit. Sometimes a flood of passionate longing and yearning would sweep over her—a longing only to see him, to hear his voice, to ask why, why he could have been so cruel. Love does not die in a moment, nor does love come to a violent end when the object is unworthy, as some people think. With Lottie it was a lingering and painful conclusion, full of memories, full of relents; the ground that had been gained by days of painful self-suppression being lost by one sudden burst of remembrance, the sight of something that brought up before her one of the scenes that were past.

While this process was going on wistful looks were directed to Lottie's lonely path by more than one spectator. The household of the signor was deeply moved by this demonstration of the helpless fate of the young lady for whom young Purcell sighed with unavailing faithfulness. He could not be made to see that it was unavailing, and the signor blinded by his partiality for his pupil, did not or would not see it; and, as was natural, Mrs. Purcell could not understand the possibility of any girl being indifferent to John's devotion. She thought Lottie's troubles would indeed be at an end, and her future happiness secured, if her eyes were but opened to his excellence. So strong was this feeling in the mind of the family that the signor himself took the matter in hand, and sallied forth with the anxious sympathy of all the household to put the case before Captain Temple, who seemed to be Lottie's guardian. "In every country but England," the signor said, "the friends arrange such matters. Surely it is much more judicious than the other way. There is some guarantee at least that it is not mere youthful folly. Now here is a young lady who is in very unfortunate circumstances, who has been obliged to leave her father's house."

"I beg your pardon, signor," said the captain, trying hard to keep his temper, "but I do not think my house is a very bad exchange for Captain Despard's."

"Nobody who knows Captain Temple will have any doubt of that," the signor said with a wave of his hand, "but what can her situation be in your house? You are not her relative. She has no claim, she has no right, nothing to depend upon,

and if anything were to happen to you —"

"To be sure," said Captain Temple, with profound gravity, not untinctured with offence, "there is much to be said on that point. We are mortal like everybody else."

Explanations were not the signor's strong point; he was wanting in tact, everybody said. "I am making a mess of it," he said, "as I always do. Captain Temple, you are a man of sense, you know that marriage is something more than a matter of sentiment. John Purcell is a very rising musician, there is nothing in our profession he may not hope for; he loves Miss Despard, and he would give her a home. Will you not recommend her to consider his suit, and be favorable to him? His origin perhaps is an objection, but he is a very good fellow, and he could provide for her."

Captain Temple kept his temper; he was always very proud of this afterwards. He bowed the signor out, then came fuming up-stairs to his wife. "Young Purcell!" he cried, "the housekeeper's son, as if all that was wanted was somebody to provide for her; but when a man has that taint of foreign notions," said the old captain gravely, "nothing will wear it out."

Mrs. Temple did not respond as her husband would have wished. Indeed this was very often the case. She had not his man's impulses nor his wordy speech. She said with a sigh, "I almost think the signor was right. I wish we could do what he says. I know a man who is very fond of her, who would be very suitable, who would be sure to make her happy. I think if I could marry her to him I would take the responsibility, but she will not see it in the same light."

"Who is it? who is it?" Captain Temple said with lively curiosity. But when Mr. Ashford's name was mentioned to him, after some protestations of incredulity, he could find nothing to say but a fretful "Do you want to be rid of Lottie?" He for his part did not want to be rid of her. She was delightful to the old man. She walked with him and sat with him, and though she had not sufficiently recovered to talk much to him, yet she listened to him while he talked, which did almost as well. The old chevalier was more happy than he had been since his own child married and went away from him. Why should Lottie be married and carried away from him too, for no better reason than that a man could provide for her? This indeed was the weak point in

Captain Temple's armor. He could not provide for his adopted daughter, but he was angry when this was suggested to him. He had got a new interest, a new pleasure in life, and he did not like the idea of dying and losing it. Why should not he live for years and keep the shelter of a father's roof over this girl, who was like his own?

As for the minor canon, it had only been when he took the girl home from her vigil on the slopes that he allowed himself fully to confess the state of his feelings towards her. When he had drawn her hand within his arm and felt her light weight upon him, holding up by that clasping of his own, the soft arm which he held the floodgates had opened. He knew very well by instinct and by observation that Lottie loved, not him, but another man. He felt very sure that what had happened had little to do with her step-mother but a great deal to do with her lover; and yet at that very moment, the most discouraging and hopeless, those gates opened and the stream flowed forth, and he no longer attempted any disguise either with himself or with Mrs. Temple, who saw through and through him. Law, whom nobody supposed to have any discrimination, had seen through and through him long ago. Law felt that it was not at all likely that any man would sacrifice so much money and trouble on *his* account; and indeed even before that he had read in "old Ashford's" eye an expression of weakness of which the astute youth was very willing to take advantage. When, however, Mr. Ashford himself gained this point of making no further resistance, and attempting no further concealment, the acknowledgment to himself of the new sentiment, little hopeful as it was, had brought him a sense of happiness and freedom. Love in his heart was sweet, even though it had no return. It made life other than it had ever been. It opened possibilities which to the middle-aged minor canon had all been closed before. Handel may be a consolation and now and then a delight, and pupils, though neither consolatory nor delightful, at least keep a man from the sense that his life is useless; but neither of these things make up the source of human requirements, nor do they help to reveal the *fin mot* of that mortal enigma which is more hard to solve than all the knots of philosophy. It seemed to Mr. Ashford when he gave up all resistance, and let this flood of tenderness for one creature take possession of his heart, that a sudden illuminator had been given to him, a light that cleared up

many difficult matters, and made the whole world more clear. With this lantern in his hand he thought he would go back to tread the darker ways of the world with more fortitude and calm. The miseries of the poor would seem to him more bearable, the burdens of humanity less overwhelming. Why? but he could not have told why. Perhaps because life itself was more worth having, more beautiful, more divine with love in it. A poor man, though he was starving, could not be so poor with that to keep him alive. He remembered in his early experiences when he had fled from the horrible mystery of want and pain, to have seen that other presence which then he took no note of in the poorest places—gleaming in the eyes of a woman, in a man's rough face, which knew no other enlightenment. This, then, was what it was. In the sweetness of the heavenly discovery perhaps he went too far, and felt in it the interpretation and compensation of all. Naturally, a man who has found a new happiness does exalt it above the dimensions of any human possession. It made the minor canon feel his own life too shattered and peaceful, it made of him a man among other men. It seemed to him that he wanted to go and help his brothers who were suffering, whose suffering had appalled him, from whom he had fled in excess of pity.

But he did not say any word of his love to Lottie, except those vague words which have been recorded. What was the use? She knew it as he knew it, and what could it be to her? After the first impulse of speech, which was for her sake rather than his—to comfort her wounded pride, her sense of humiliation, if nothing else, by the knowledge that she was priceless to another if rejected by one—no desire to speak was in his mind. He surrounded her with every care he was permitted to give, with a thousand unexpressed tender-nesses, with a kind of ideal worship such as was most likely to soothe her wounds and to please her, at least, with a sense that she was beloved. In this way the winter went slowly on. Law did not sail till the early spring, being detained by the minor canon as he would, if he could, have detained a ray of sunshine that warmed her. And thus Lottie was surrounded by all the fairest semblances of life.

The fairest semblances! How often they collect about those who can derive no advantage from them! A good man loved her, but Lottie could not take his love; the kindest domestic shelter was about her, but she had no right to it—she was not

the daughter of these kind people, and they would not make her their servant as she had asked them to do. Musing in her own mind over all that lay about her, this seemed the only true standing-ground that she could perceive. Now that she wanted a way of living, a real occupation, her voice had failed her and she could not sing; now that she had doors of marriage opened before her, her heart was too sick even to contemplate that possibility; now that she had a home where she was beloved, it was not her home but the house of a stranger. To all this she had no right. If they would let her be their servant, that would be true; if Mr. Ashford would see that she was not worth loving, that would be true; if she could take up the trade she had despised, in that there would be an honest refuge. All these things were out of her reach. She said nothing about the thoughts in her heart, but they burned within her; and nobody understood them, except perhaps Mr. Ashford, to whom she never confided them. Law thought her very well off indeed, and declared frankly that he left England with an easy mind: "You are one that will always fall on your feet," he said, with perfect satisfaction. Captain Despard even, who had at first resented the new arrangement of affairs, came at last in his finest manner and made very pretty speeches to Captain Temple and his wife. "If, as I understand, my daughter's society is a real pleasure to you," he said, "I am always glad when I or mine can be of use to my neighbors, and certainly, my dear madam, she shall stay. Indeed, in the present state of my domestic circumstances," he added, with a wave of his hand, not perceiving Captain Temple's angry eagerness to speak, which his wife subdued with a supplicating gesture, "I will not conceal from you that it is an ease to my mind to know that Lottie is among the friends of her own choice. My wife and she," Captain Despard said, with a little shrug of his shoulders — "we all know what ladies are, and that occasionally unpleasantnesses will occur — my wife and she have not got on." Thus Lottie was left by those who belonged to her. And when she retired to the room that was her own in the new home, which was so like the little room in the old but so much more dainty, with everything in it that the old people could think of to make her comfortable, and all the little decorations which a mother thinks of for her child, Lottie would stand in the midst of all these evidences of love and kindness, and ask herself what she could do — she had never

been so well off in her life, what could she do? She had "no claim" upon the Temples, as the signor said, "no right" to their kindness. The captain's niece, who lived in St. Michael's, had looked at the interloper as the relative of a foolish old couple who were wasting their means upon a stranger might be excused for looking. What was she doing more than living on their charity? What could she do? Oh, that she had now the voice which she had cared so little for when she had it! How strange, how strange it all seemed to her now! She had, she said to herself, a trade, an honest trade in her hands, and she had not cared for it, had struggled against its exercise, had not wished to qualify herself for it; and now it was lost to her. This was all that was Lottie's fault; the other strange paradoxes about her had come without any doing of hers. But the result of all was that, with love and kindness on every side, she had no place that belonged to her, no right to anything. After the kind people who were so good to her had gone to their rest, the girl would sit and think over this problem. What was she to do? To be obliged to turn to this did her good; it took her mind away from the wounds of her heart, it brought in new objects — new thoughts. She could not dwell forever, as a disengaged mind might have done, amid the ruined temples and palaces of her love; she could not sink to the ground and conclude, as in happier circumstances a broken-hearted girl might have done, that all was over. On the contrary, life not being over, nor any end procurable by means of hers, an entire world of new difficulties and troubles was brought in which Lottie had to meet, and, as she might, find a solution for.

On the day before Law's departure, which had been so often delayed, she went back to her father's house, under her brother's guardianship, to take away the few little possessions which remained there. Law had been a very faithful guardian of Lottie's little belongings. There was nothing that Polly would have liked better than to enter and rummage through her stepdaughter's things, searching for secrets through all the little drawers and boxes which Lottie had taken a girlish pleasure in keeping in good order. But Law had stood up like a dragon for his sister's property; and Captain Despard, who sometimes put himself on Lottie's side, by a certain *esprit de famille* against the wife, who, after all, was an alien and not one of them, supported Law. Thus

the men of her family, though they had not hesitated to treat her carelessly and even harshly themselves, yet made a certain stand against the interference of any other. It was a day in early April when Lottie reluctantly went into her father's house on this errand. Polly was out; the house was vacant and quiet as when it had been her own, and it is not to be described with what a yearning the girl looked at the shabby furniture, the old piano, the faded rooms in which she had spent many a troubled and many a dull day, and beat her wings against the bars of her cage, and wished for a hundred things which were never to be hers. The reader knows how far Lottie had been from being happy, but yet she thought she had been happy, and that nothing better could have been desired than to be the household providence, and "take care," as she called it, of her father and brother. All that was over. She could not bear to go into the little drawing-room, where *he* had visited her, where she had been so happy and unhappy. Her heart beat as she went up the old stairs. She was far better off with the Temples, who could not pet or serve her enough; yet with what a yearning she came into the house which had once been hers, but in which now there was no place for her! In her own room, thanks to Law's care, she found everything as she had left it, and it is not to be told what anguish filled Lottie's breast as she looked at her little white dress, all carefully prepared for the event which was never to happen, and the little box with the bonnet which she had made with such sweet agitation and tumult of heart. There was the pearl locket upon its white ribbon, her sole ornament. She gathered these things together and carried them, not letting even Law touch them, to her new home. She could not speak as she went up and shut herself in her new room. A little fire was burning there, a luxury unknown to Lottie in the days when she was her own mistress, and no one cared how chilly she might be. Then with old pains, "choking sorrow" in her throat, she undid the little bit of maidenly finery for which she had so much wanted a bit of orange blossom. It was a nothing, a little knot of tulle and ribbon — a piece of vanity not worthy a grave thought, so any moralist would have said who had seen Lottie stand speechless, tearless, a great sob in her throat, with the poor little bonnet in her hand. A bonnet, there is nothing tragic in that. She put it upon her fire and watched the light stuff flame and fall into sudden ashes. It was the affair of a

moment; but those hopes, those prospects of which it had been the token, her life itself, with all that was beautiful in it, ended too.

Then she sat down for the hundredth time and confronted the waste of darkness that was her life. What was she to do? Perhaps it was the final ending of her dream which had been symbolized by the destruction of that bit of tulle and ribbons which moved her. For the first time her dreamy self-questions took a different tone. She asked herself, not what am I to do? but something more definite. Law was going away the next day, the only being except her father to whom she had any right, on whom she had any claim — going away in comfort, in high hope, as much as she could have desired for him. By whose doing? She had given up the case of Law, selfishly absorbed in her own hopes, and who was it who had taken her place and done the thing which Lottie had only wished and longed to do? She seemed to see him standing before her, with tenderness beyond words in her eyes. Always her good angel — how often he had interposed to help her! — from that early time at the Deanery when she had sung false in her agitation, and he had covered the error and beguiled her into that divine song which at that very moment she could hear thrilling all the air pealing from the Abbey. Was it because this happened to be the afternoon anthem that she thought of that simple beginning of the minor canon's benefits? Never since had he failed her, though of all the people upon whom Lottie had no claim, he it was on whom she had the least claim. He had saved Law from his aimless idleness, and he it was who had awakened her out of the miserable dream that had almost cost her her life. How could she repay him for all he had done for her? In one way, an only way. She shuddered, then stilled herself, and faced the thought with all the courage she had left. Marry him! If he would have her, if he wanted her, why should not she marry him? She trembled as the words came into her mind. It was not she that said them; something seemed to say them in her mind, without any will of hers. So good a man, so kind. Did it matter so much whether she liked it, whether she did not like it, so long as it pleased him? Perhaps this was not the right way in which a calculation ought to be made, but Lottie did not know anything against it. At all times it had been easier for her to think of others than of herself. Only once had she pleased herself, and no good had come of

that. Her heart began to beat with an heroic impulse. She was not worth his having, she whom every one had cast off. But if he thought so? She shuddered, yet her heart rose high in her bosom. She would do her best, she would be a good wife, that would be within her power. She would serve him humbly, that he might forgive her for not loving him. She rose up to her feet unconsciously as this great resolution burst upon her mind.

"Lottie," said Law at her door, "the service is over, and the signor is practising. Come over to the Abbey with me. I'd like to wander about the old place a little the last night I am here. Come, it'll be something to think of," said Law, more moved than he liked to show, "when we're thousands of miles separate over the sea."

Lottie did not wait to be asked again. She hurried to him, glad to be thus delivered from the thoughts that were getting too much for her. Long, long months had passed since the brother and sister had gone to church together. The close vicinity to the Abbey and its frequent services had broken up the old childish Sunday habits. And it was not going to church now, only to the silent beautiful place all deserted, with the organ pealing through its silence. Law's heart was touched, though he was too successful and prosperous now to be easily moved. He strayed about the majestic stillness of the nave with tears in his eyes, thinking — this time to-morrow! This time to-morrow he would be prosaically ill or prosaically comfortable, and thinking little of what he left. But for the moment it seemed to Law that when he once was gone his heart would turn like that of any poet to the sweet friends to whom that day he had said farewell.

The Abbey was altogether still except for the music. No one was about; the last ray of the westerly sun had got in among the canopy work over the stalls, and tangled itself there. Underneath the shadows of the evening were creeping dimly, and through the great vault the organ pealed. What bursts of wonderful sound, what glories in the highest, what quiverings of praise unspeakable! Lottie raised her face unawares to the gallery from which that music came. How her life had gone along with it, shaping itself to that high accompaniment! It had run through everything, delight and misery alike, good and evil. Her heart was moved already, and trembling under the touch of new impulses, resolutions, emotions. She

stood still unawares, with her face turned that way, a new light coming upon it; once more the music got into her soul. With her head raised, her arms falling by her sides, her heart going upwards in an ecstasy of sudden feeling, she stood spell-bound. She did not hear — how should she? — a whisper in the organ-loft, a noiseless change of music, nor see the anxious faces looking out upon her from among the fretwork of the carved screen. The torrent of sound changed; it breathed into a celestial softness of sorrow and hope; tears dropped liquid like a falling of rain; a counter-stream of melody burst forth. Lottie did not know what she was doing, the spell upon her was broken. "I know that my Redeemer liveth," she lifted up her voice and sang.

In the organ-loft there was a group which clustered together, scarcely venturing to breathe. The signor was the one who had most command of himself. "I always knew it would come back," he said in sharp staccato syllables, as he played on. Young Purcell, who loved her, sat down in the shadow and laughed and cried, blubbering not with dignity. The minor canon, who did not once take his eyes from her, waiting the moment that she might falter or want succor, watched, looking over the carved rail with a face lighted up like her own.

Thus was Lottie restored to art, and was it to love too?

From Chambers' Journal.

ROBERT DICK THE THURSO BAKER.

THROUGH the indefatigable and genial labors of Dr. Smiles, we are favored with an account of a self-reliant genius, whose biography will be a suitable companion to that of Thomas Edwards the Banffshire naturalist, and which we doubt not will be equally popular. While Edwards still lives in deserved esteem as a man of science, unfortunately Robert Dick died twelve years ago, and is beyond the reach of either praise or succor which the world might have been pleased to bestow. The circumstance imparts a certain mournfulness to Dr. Smiles's narrative; but for general interest it comes up to any of his previous productions. As an incitement to a perusal of the work, "Robert Dick, Baker of Thurso, Geologist and Botanist" (Murray, 1878), we offer the following condensed sketch — premising that the book abounds in beautifully executed wood-en-

gravings illustrative of the picturesque scenery on the northern coast of Caithness.

Robert Dick was born in 1811, at Tullibody, a village situated at the foot of the Ochil Hills, Clackmannanshire. He had a brother and two sisters. His father was an officer of excise, and noted as an attentive and able man. Robert had a good plain education, which included a little Latin. His schooling, however, was abruptly cut short by a family calamity. His mother died, his father married again, and the second wife minding only her own children, treated her stepsons and stepdaughters badly. Robert was taken from school, and bound an apprentice to a baker, when he was thirteen years old. At once he was plunged into a routine of severe and ill-requested labor. He got up at three in the morning to light the oven fire, and worked and drudged until seven or eight, and sometimes nine at night. As he grew older, he was sent out with a load on his head, to deliver the bread in the neighboring villages. Though toilsome, these excursions imparted much pleasure to the boy, for they gave him an opportunity of observing nature, which had charms for him in all its moods. He was fond of examining plants, and watching their character and development. In this way he acquired a practical knowledge of botany, while other boys only spent their time in mischief or idleness. At the age of seventeen, his apprenticeship expired, and he went to be a journeyman baker in Leith. From this place he went to Glasgow, and afterwards to Greenock.

His father meanwhile had removed to Thurso, in the county of Caithness, and by his recommendation Robert went to that town to commence business on his own account. He arrived in Thurso in the summer of 1830, when he was about twenty years of age, and set up as a baker in a house in Wilson's Lane. In trying to begin the battle of life in so small and remote a town, he made a mistake, which was repented of when too late. Thurso is the farthest north town in Great Britain. It is situated at the head of an inlet from the Pentland Firth, which divides Scotland from the Orkney Islands. The country around is for the most part bare and desolate, and exposed to fierce, driving winds. Hedges will not grow. The arable fields are inclosed with flagstones set up on end. The seashore consists of tall precipitous cliffs of red sandstone, worn into fantastic shapes by the incessant dashing of the waves, which come rolling in impetuously from the Atlantic.

No place could be seemingly less favorable than Thurso, either for beginning business or for pursuing researches into botanical science. But from the force of circumstances, Dick had no choice. With his small means, he opened shop as a baker of bread and biscuits, he doing all the operative work himself, and trusting by diligence to succeed. It was so far in his favor that there was only another baker in the town, and there was a hope of being able to supply ship-biscuits to the mariners and herring-fishers who frequented, and at times took refuge in the Bay of Thurso. Usually a Scotch baker starts with very little capital, and he needs no hired assistance. All he has to do is to buy a bag of flour, and make a young woman his wife. He bakes the bread; and the wife, installed in a small room in which by a single pane of glass she can command a view of the counter, takes charge of the shop. It is a cheap and convenient arrangement, and answers until better times. Dick had at first a notion of marrying; but not being successful in his wooing, he for a time was assisted by his sister Jane; and when she and other members of the family quitted Thurso, he was fortunate in securing the services of a steady young Highland woman, named Annie Mackay, who became his housekeeper and attended to sales in the shop for the long period of three-and-thirty years. Never was there a more honest or simple-minded being than Annie. When Dick was in the bakehouse, or away for hours on his rambles in search of plants or fossils, Annie took charge of affairs. She was not troubled with book-keeping. It was all cash down. When any wandering beggars petitioned for a morsel of bread, she told them "the bread's no mine to gie;" and so got rid of their importunities. A good hint this to servants.

The maltreatment which Robert Dick endured in his youth had somewhat soured him, and this unhappy feeling clung to him through life. Driven in upon himself, he made no companions, visited no one, and invited no one to his house. Living in the most economical manner, and strictly temperate in his habits, he devoted himself entirely to his daily labor as a baker, and to scientific inquiry. At first, he had no books to assist him, and no one to advise with concerning the nature of plants and geological theories. On this account he became an original inquirer; and by dint of perseverance and the few books he was at length able to purchase, he acquired an amount of knowledge far beyond that of

ordinary amateurs in science. By rising and going to work at three o'clock in the morning, he had his batch early out of the oven, and ready to be disposed of by Annie to his limited number of customers. Then off he set on his rambles across the moors or along the seashore; and with no other sustenance than one or two biscuits and a drink of water from a brook, he would spend hours and hours in his investigations. People thought him crazy. They could not understand what he was seeking for among the mosses or the rocky precipices. In these pursuits, which were scarcely interrupted by bad weather, he derived the greatest enjoyment. Shy in his general intercourse, he was happy in himself. Often his feelings broke out in singing, for he was fond of the lyrics of Burns; and with a literary turn, he composed some clever pieces in verse for his own amusement.

Nothing that was interesting in nature escaped him. Besides plants and flowers, insects, such as beetles and moths, were his delight. The smallest creature lifted up his mind to the great Creator of all. "He collected," says Dr. Smiles, "no less than two hundred and fifty-six specimens of beetles in nine months—in fact all that could be collected in Caithness. He collected two hundred and twenty specimens of bees, and two hundred and forty specimens of butterflies and moths. The boys soon found out the strange baker and his ongoing. He said to them: 'Whenever you find a rare butterfly, bring it to me, and I will give you something for it.' When an unusual butterfly was brought to him, he took great care of it, saw its various transformations, and noted the results." He would take nothing for granted, because it was said in books. He tested everything by acute and patient investigation. This is the true way to discover the workings of nature. It was nevertheless necessary, for the sake of knowing the names and classification of objects, that he should have certain books. These he procured from the merchant in Leith who supplied him with flour. The books were packed in paper and placed in the flour-bags. In the same manner he procured a powerful microscope. All came safely packed in the flour. By means of the microscope he vastly added to his botanical knowledge; and in fact mastered the entire subject of botany as exhibited in northern parts. "It was a long and arduous work, but he successfully carried out his purpose. At length the plants of Caithness from one end of the county to the

other—from the Morven Hills in the south to Dunnet Head in the north—from Noss Head in the east to Halladale Head in the west—became as familiar to him as the faces of familiar friends."

In one of his night excursions, he was taken for a poacher in quest of salmon. A watcher kept him in sight for several hours, sometimes creeping on his hands and knees, sometimes hiding behind bushes. At length the man thought he saw Dick lifting what seemed a fish. He rushed upon him with the exclamation: "Now I have caught you poaching!" Dick "turned round in a composed manner and said: 'No, sir; I am not poaching; I am only gathering some specimens of plants!' He then opened his handkerchief, which contained some herbs, plants, and flowers. The watcher was disappointed and disgusted. He had been crouching for two hours on his hands and knees, coming up with his man, and finding in his possession, not a salmon, but a lot of things, which in his estimation were worse than useless. . . . Many people about Thurso who saw Dick coming into the town with his feet bedabbled with dirt, and his jean trousers wet up to the knees, said that he would be much better attending to his baking than wandering about the country in search of beetles, bumblebees, ferns, and wild plants." Invectives of this kind, so like the petty detractions which prevail in small country towns, did not discompose the baker. He never neglected his business, though it may be admitted he took no means to extend it.

Dick was not in the least particular about his dress. He for many years wore an old-fashioned swallow-tailed blue coat with metal buttons; and his hat would be thought hardly worth picking up. On his feet he wore a pair of strong hobnailed shoes. In his long journeys in quest of plants, he always dipped his feet, stockings and all, in a basin of water, then tied on his shoes, and set off. He was now prepared for wading through rivers and burns, and the more his feet were wet he walked the better. He derided the idea of walking any great distance with dry feet. He cared nothing for walking for an hour up to the ankles in salt-water, when looking about for a plant along the shore. These feats did not seem to have any immediately bad effect. Possibly they contributed to undermine his constitution.

Having mastered the entomology and botany of Caithness, and formed a large collection of specimens in these departments of science, he next took to geology,

for which the bold coast scenery offered favorable scope. A casual glance at the Pentland Firth demonstrates that it is an inburst of the Atlantic, which in some long-past age had severed the mainland on the south from the Orkney Islands on the north. The coast of both is of the same old red sandstone, worn into precipitous cliffs, also isolated stacks, one of which, on the Orkney side, called the Old Man of Hoy, is seen standing weirdly out like the presiding genius of the waters. All along the rocky shores, one may spend days and years in excavating fossiliferous remains of fish and plants, that by some convulsion of nature had been imbedded in clay or sand, which are now transformed into stone. Here, with hammer or chisel in hand, Dick was in his element. Going down to the shore one morning after a terrific storm, "he found a piece of old land strewed here and there with prostrate hazel stems, and picked out of the clay five nuts; but how long it was since they grew, no one knows, but it must have been ages ago."

At Holborn Head on the west and Dunnet Head on the east of the Bay of Thurso, the scene is the grandest on the coast of Great Britain, and singularly wealthy in fossils. In relation to a fossil fish, the *holoptychius*, which Dick discovered, he opened a correspondence with Hugh Miller, in 1840. Miller was delighted with the discovery, and by it was able to make an important correction in one of his geological works. Not the least selfish, Robert Dick from this time forward sent numerous new fossils that he found to Miller, accompanied by letters that are partly incorporated in the work before us. The discovery of such vast numbers of fossilized fish in the clay-slate strata led to interesting speculations. The fish had been submerged in their clay, which layer above layer was changed by pressure into flagstones. In fact, the commercial value of Caithness flags consists in the amount of dead fish they contain; for the bitumen of the fish has imparted prodigious hardness to the stone. "Thurso is built of dead fish," said Robert Dick; "and the capitalists and laborers are also maintained by the same article."

Hugh Miller visited Thurso, and spent a few days with Dick, who hospitably gave up his bed to him. The two had some interesting wanderings in the neighborhood. After Miller went away, Dick continued to send him fossils, but keeping duplicates for his own collection. One day in a long ramble he was at a loss to

know the proper route, and seeing a farmhouse, he went to inquire his way. Finding an old man thrashing barley in a barn, he addressed him. We give the account of the interview. "Please," said I, "how far is it to Dalemor, and which is the best road?" "Eh? Are ye gaun to Dalemor?" "Yes." "And where cam ye frae?" "Dunbeath." "Did ye come from Dunbeath the day?" "Yes." "An' where are ye gaun to?" "Thurso." "Are ye gaun to Thurso?" "Yes." "And did ye wade the river?" "Yes." "An' are ye gaun to wade it again?" "Please tell me the road to Dalemor." "Hae ye snuff?" "No; I am sorry I have no snuff." "Oo ay. Haud doon the strath; doon by the river; strecht doon!" "How many miles is it to Dalemor?" "Four miles; ay, just four miles." Dick went as directed, and after a long and weary march found that he had been deceived. The old fellow had taken him for an exciseman, and purposely sent him wrong. After a toilsome journey, Dick thankfully got home.

Obscure and unpretentious as were the labors of Robert Dick, he gradually became known as an earnest, practical worker in geological science. After the death of Hugh Miller, he was visited by Mr. Charles W. Peach, a person of congenial tastes, who in the humble position of a coast-guardsmen in Cornwall had acquired general respect from his diligent investigations into the nature of zoophytes. Having been promoted in the service, he removed to Peterhead, and thence he made a pilgrimage to converse with Dick and see his collection of specimens. A much more eminent individual was anxious to be acquainted with the Thurso baker. This was Sir Roderick Murchison, director-general of the Geographical Society. In the course of a journey through the northern counties, he called upon Dick, who was so busy with his batch at the time that he could pay no attention to his visitor. When he visited Thurso on a subsequent occasion, he was accompanied by Mr. Peach, and was fortunate in finding the baker disengaged. "Dick was in the bakehouse, and still in his working-clothes. A conversation took place about the dip of certain rocks in Caithness. Sir Roderick complained of the want of any sufficient map of the county. Dick agreed with him, but said: 'I will endeavor to shew you a map of the county.' Taking up a few handfuls of flour, and spreading it out on the baking-board, Dick proceeded to mould a model in relief of the geolog-

ical structure of Caithness. He shewed all the principal features of the county—the hills and dales, the rocks and cliffs, the dislocations and fractures, the watersheds and the drainage; and in fact an outline of the entire geography of the county." Sir Roderick was surprised and delighted; and in a letter before his departure from Thurso, he thanked Robert Dick for the valuable information he had received. At the meeting of the British Association held at Leeds in 1858, Sir Roderick took occasion to make the following remarks on the Thurso baker.

"In pursuing my researches in the Highlands, and going beyond Sutherland into Caithness, it was my gratification a second time to meet with a remarkable man in the town of Thurso, named Robert Dick, a baker by trade. I am proud to call him my distinguished friend. When I went to see him, he spread out before me a map of Caithness, and pointed out its imperfections. Mr. Dick had travelled over the whole county in his leisure hours, and was thoroughly acquainted with its features. He delineated to me, by means of some flour which he spread out on his baking-board, not only its geographical features, but certain geological phenomena which he desired to impress on my attention. Here is a man who is earning his daily bread by hard work, and yet who is able to instruct the director-general of the Geographical Society. But this is not the half of what I have to tell you of Robert Dick. When I became better acquainted with this distinguished man, and was admitted into his sanctum—which few were permitted to enter—I found there busts of Byron, of Sir Walter Scott, and other great poets. I also found there books, carefully and beautifully bound, which this man had been able to purchase out of the savings of his single bakery. I also found that Robert Dick was a profound botanist. I found, to my humiliation, that this baker knew infinitely more of botanical science—ay, ten times more—than I did; and that there were only some twenty or thirty plants that he had not collected—the whole of his specimens being arranged in most beautiful order."

This eulogium pronounced by Sir Roderick Murchison at Leeds made the name of Robert Dick known far and wide. "He was," says Dr. Smiles, "spoken of as one of the most extraordinary instances of the pursuit of knowledge under difficulties. Even the Thurso people began to look upon him in a different light. . . . The lion-hunters came upon him. Point out a

man who has done something out of the ordinary way, and immediately a tribe of nobodies flock to see him. If they cannot get introduced to him, they will look at him through his window, and try to see the lion through the bars of his cage. Dick hated all this nonsense. He would not be lionized." Only a few individuals brought by Sir George Sinclair were admitted. Among these were Mr. Thomas Carlyle and the Baroness Burdett Coutts.

With all his diligence, Dick's business fell off owing to competition, and this caused some bitterness in his feelings. At length, a great misfortune overtook him. Twenty-three bags of flour on their way from Leith were lost in the wreck of the steamer at Aberdeen, and were not insured. It was a loss of £45. 13s. 6d., and Dick had not the money at command. In despair he was obliged to sell his magnificent collection of fossils which he had gathered with so much assiduity over a period of thirty years. A gentleman in London bought the fossils for forty-six pounds. The collection should have been secured for Thurso. Latterly, Dick returned to the study of botany, chiefly in connection with mosses, which though commonly despised, are most interesting in their variety and character. Linnæus considered that a small quantity of moss that could be covered by the hand might be the study of a lifetime. "Every one remembers how Mungo Park, when lost in the desert, was delighted with the sight of a tuft of moss. The little living jewel growing amongst endless wastes and arid rocks, melted the traveller's heart. 'If God cares for the moss,' he said, 'surely he cares for me;' and Park went on his way with an uplifted heart."

Dick had numerous eager applications for specimens of one kind or other from persons in London and elsewhere; and he was liberal in his donations. No one appears to have thought that he should be requited in some shape for his generosity. Everything was taken for nothing. Dreadfully disheartened by the loss of his fossils, and also the falling away of his business, he still struggled on. He would not be beat, he said, while he was able to work. It was some consolation that his sister Jane survived, at Haddington, and that she corresponded with him in a sympathizing spirit. In 1865, he was still baking his small batch, and rambling along the shore in his favorite pursuit. But his health was giving way. The ceaseless, pitiless, pelting rain, he said, was killing him. He took his last journey on the 29th August

1866. It was too much for him. He staggered home — to die. Pious and noble-minded, he declared he was ready to depart. "He was wearied of life. It was better he should die. He had been oppressed with poverty, and now he was oppressed with agony. Why should he remain a little longer? He had done his appointed work, and was now more than resigned to leave it. He longed to be at rest. In the morning of the 24th December, Robert Dick's spirit returned to Him who gave it. He died quietly and peacefully."

Thus was terminated the life of one of the most remarkable men of our time. Every one must appreciate the resolute independence and simplicity of his character, his persevering industry, frugality, and modesty as regards his own services to science. His whole life presented a striking instance of self-sacrifice for entirely unselfish ends. Fortunately, by the sale of his books and other effects, sufficient was realized to pay all his debts, which amounted to only seventy-two pounds. His nephew, as nearest relative, presented his herbarium to the Scientific Society of Thurso; and we regret to learn that through neglect it is fast sinking to decay. It is sorrowful to think how Dick had been misunderstood, and sometimes cruelly misrepresented, by those immediately about him. Only when he had passed away did the people of Thurso realize and acknowledge that a distinguished man, an honor to Caithness, had been amongst them. As if to atone for their error, they conferred on him the dignity of a public funeral, and set up a costly monument to his memory. Perhaps the only sincere mourner for the deceased was poor Annie Mackay, who still lives to praise, amidst tears, her kind and good "maister," ROBERT DICK, THE BAKER OF THURSO.

From Nature.

MUSIC AND SCIENCE.*

THE question, In what way does science enter into the subject of music? is one that by no means admits of an easy answer. If we were to put it to various persons interested in music in different ways we should find their opinions most vague

and contradictory. A university scholar, or a physical lecturer, would make the science of music consist entirely in the doctrines of acoustics; while, on the other hand, we should find some of the most eminent musical professors telling us that these had nothing to do with music at all, but that science meant the study and application of the rules of musical composition. Or possibly it might even be held that a skilful manipulation of the violin, or an appropriate management of the voice in singing, or an intelligent phrasing of piano-forte passages, or other refinements of execution constituted all the science that musicians need aspire to.

A quarter of a century ago such a question would have excited no interest. People in general were satisfied to take the art as they practically found it, and troubled themselves but little as to the principles on which it was based. But the march of knowledge has changed the aspect of the matter. Modern philosophical investigation has included music in the universality of its aims, and the musician, however conservative, must submit to a searching inquiry as to the real nature of the stuff in which he deals.

The great work of Helmholtz, published in 1863, gave the first real stimulus to scientific musical inquiry; and although many years passed before it became much known in this country it at length aroused attention, and some of the most intelligent students of the art began to see that there was really something to be inquired into — the first step towards accurate knowledge of any kind. They observed the beneficial operation of the learned societies, where papers on the subjects they embraced were brought forward; and the idea occurred to them that an association of a similar character for music would not only enable the scientific questions connected with it to be publicly discussed, but might also be made conducive to the welfare of the art in a practical point of view. The idea was mentioned to one of the most eminent men of science (now president of the Royal Society), who, warmly approving it, issued the following circular: —

50 Grosvenor Place, April 8, 1874.

DEAR SIR, — It has been suggested by several leading persons interested both in the theory and practice of music, that the formation of a society similar in the main features of its organization to existing learned societies would be a great public benefit. Such a musical society might comprise among its members the foremost musicians, theoretical

* Proceedings of the Musical Association for the Investigation and Discussion of the Subjects connected with the Art and Science of Music. Vols. I. to IV. First Session, 1874-5; Second Session, 1875-6; Third Session, 1876-7; Fourth Session, 1877-8.

as well as practical, of the day, the principal patrons of art, and also those scientific men whose researches have been directed to the science of acoustics and to kindred inquiries. Its periodical meetings might be devoted partly to the reading of papers upon the history, the principles, and the criticism of music, partly to the illustration of such papers by actual performance, and partly to the exhibition and discussion of experiments relating to theory and construction of musical instruments, or to the principles and combinations of musical sounds.

With a view to ascertain the opinions of persons interested in these subjects, and to attempt a more precise definition of the objects and constitution of such a society, it is proposed to hold a meeting here, at which your presence is requested on Thursday, April 16, at 2.30 P.M.

I am, dear sir, yours faithfully,
(Signed) W. SPOTTISWOODE.

This led to the formation of the association whose proceedings are mentioned at the head of this article. The rules were judiciously framed, so as to avoid the rocks on which former musical societies had been shipwrecked; and the society has now gone successfully through four sessions. We learn from the report just issued, at the commencement of the fifth year, that the finances are prosperous, that the meetings are well attended, that the officers are zealous and efficient, and that a series of good papers are forthcoming for the future; from all which it may be fairly inferred that the institution has taken a permanent position.

The character of the society is, of course, best displayed by the contents of its "Transactions." We cannot pretend to review the thirty-six papers (some of them very elaborate) contained in the four volumes before us; it will be an easier course to indicate briefly, in the first instance, what are the "subjects connected with the art and science of music" which more especially deserve "investigation and discussion," and then to see how far the papers actually presented to the association have fulfilled the object aimed at in its title.

Giving precedence to science, one may conceive that the "principles and phenomena of acoustics" would claim attention. It is true, as has already been hinted, that some eminent practical musicians repudiate the relevancy of these inquiries, and discourage their study, on the ground that a knowledge of acoustics is unnecessary to the practical musician, whether composer or performer.*

But fortunately the general spread of education sufficiently disposes of arguments of this kind. There are, and no doubt always will be, persons who are satisfied with the minimum amount of knowledge to enable them to earn their daily bread, but it is to be hoped the number is decreasing every day. A man who lives by an art will, if his mind be properly constituted, be in no wise reluctant to learn all he can about it, even though the knowledge may not be immediately convertible into money. Musicians must, in spite of the disparaging opinion of some of their leaders, be treated as intelligent beings, who have minds capable of enlightenment and instruction, and surely there is nothing unreasonable in assuming that the philosophical principles on which their art depends must present some interest to them, if laid before them in an intelligible form. The doctrine that such knowledge should be confined to cultivated amateurs, and forbidden to professional musicians, is simply a libel on the intelligence of those to whom we owe enjoyment of so high an order. If, then, these principles are to be studied, the science of acoustics must necessarily form the basis of the study. The splendid investigations of Helmholtz as to the nature of musical sounds and musical sensations form a fund of knowledge of the most interesting and instructive kind, and illustration and discussion of such topics would be by no means out of place before the society. We believe that the great fundamental fact of the compound nature of musical sounds, which now has become as firmly established as any physical fact can be, is hardly yet understood, or its great significance appreciated by the great mass of the persons who have to do with its effects every day of their lives.

It happens, however (no doubt for good and sufficient reasons), that the more abstract principles of acoustics have received but little attention in the society. We only notice three papers which come within this category, and these on quite subsidiary points, namely, "On our Perception of the Direction of a Source of Sound," by Lord Rayleigh; "On the Sensitiveness of the Ear to Pitch and Change of Pitch," by Mr. A. J. Ellis; and "On the Musical Inventions and Discoveries of the late Sir C. Wheatstone," by Prof. W. G. Adams.

But the science of acoustics is a very different thing from the theory of music.

* It is a remarkable example of this view that in a new elaborate and voluminous English "Dictionary of

Music," now in course of publication, the word *acoustics* finds no place.

There is much misunderstanding on this point; many people confuse the two, whereas the former is in reality only the introduction to the latter. A student may be well acquainted with all the scientific facts and theories relating to the production and transmission of musical sounds, and yet know nothing of the mode in which these data bear on music itself. Helmholtz, who, with wonderful knowledge and sagacity, appears to have anticipated almost every possible view of the subject, has fully expressed this distinction not only in the substance of his great work, but in its very title-page. He calls it "*Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik*," thereby declaring that the acoustical doctrines he so admirably lays down are not to be considered as forming of themselves a theory of music, but are merely intended to *serve as a basis* for such a theory. Starting from these data, it becomes necessary to consider the influence they have on the varied and complicated forms and rules which guide the structure of musical composition, as, for example, the construction of the ordinary scale, the nature of chromatic notes, tonality, the combinations and progressions of harmony, the rules of melodial counterpoint, musical form, and so on. A crowd of most interesting questions arise as to how far all these practical matters have been influenced by the physical properties of musical sounds, or how far they are the result of free artistic invention. Helmholtz devotes the second part of his work to the discussion of these and kindred questions, on which, aided by a competent knowledge of music, his great reasoning powers have enabled him to throw much new light. But this part of his labors has been hitherto almost a sealed book to musicians; it is difficult, often elaborate, and sometimes obscure, and the interpreters who have so ably popularized his acoustical researches have stopped short before venturing on what was to physicists a less familiar region. Yet this is by far the most important section of the work, from a musical point of view; it is, in fact, the real "theory of music," the true musical philosophy, in which the proper application of science to music is to be found; moreover, unlike abstract acoustics, it touches closely on the practice of the musical art, and the habits of thought of its professors. There are few teachers of musical composition who do not to some extent attempt to found their instruction on natural principles, or what they think to be

such; but the theories thus propounded are for the most part crude, vague, and founded on merely empirical fancies, having no philosophical origin, and such as will not stand the test of scientific investigation or strict logical reasoning; and hence we can hardly wonder at the fact that they rather obstruct than aid the efficiency of musical instruction.

This subject, therefore, the "Application of Scientific Data and Scientific Reasoning to the Theory of Music," is one which offers every inducement for the higher order of musical study, and its discussion is eminently in place in such a society as that before us. The results of the modern investigations are so new, and in many respects so antagonistic to the ideas hitherto prevailing among musicians, that it is not to be expected they will be at once fully understood or favorably received. Already a considerable amount of opposition has been manifested to them; it is reasonable and proper that they should be fairly considered, and it is in the highest degree desirable that they should be clearly explained. The subject has not been neglected at the meetings of the association, for, although no systematic treatment of it has yet been attempted, we find no less than eight papers on various points of theoretical detail. Four of these are on intonation and temperament (a favorite theme with musical mathematicians, but somewhat unpalatable to practical men, who consider the out-of-tune equal division of the octave "good enough for them"); a fifth aims at exposing the fallacies and inconsistencies of certain of the old theoretical systems; another treats of the philosophical nature of intervals and of the construction of the scale; another expounds some elementary views on harmony; and the eighth exhibits various numerical calculations on musical ratios, etc.

Another point that furnishes a most profitable topic of study is *musical history*. It is impossible to look far into music without becoming aware how largely modern form and structure are derived from what has gone before, and the careful examination of this clears up many points of theory for which no other sufficient explanation can be found. Nothing could be more in place for a "musical association" than historical papers, not as mere matters of antiquarian curiosity, but as bearing on the various changes of musical form. We only, however, find two historical papers, one, an instructive essay, by Sir Frederick Ouseley, on the "History of Ecclesiastical

Music in Western Europe," the other an interesting monograph, by Mr. Cummings, on "Purcell."

The *construction of musical instruments* offers a large and varied source of interest, combining the laws of acoustics, the application of mechanical skill and invention, and the adaptation to practical musical use. There are six papers on this, relating to stringed and brass instruments, drums, and the voice.

Finally, there are abundance of topics connected with the *practice of the musical art* which admit of discussion in such a society; for although, in a scientific journal, it is our chief province to point to the subjects in which science takes part, yet it would be a misuse of the society to let these predominate to the prejudice of the more practical matters which come home more directly to professional men, and we consider it a good evidence of the flourishing condition and prospects of the society that these practical points have received so large a share of attention. By far the larger number of the papers have been of this practical kind, relating to musical notations and nomenclature, criticism, practical standards of pitch, the analysis of great musical works, pianoforte playing, the cultivation of sacred music, the connection of music with language, the laws of expression, modes of tuition, and musical libraries. A paper on the last-named subject led to a memorial to the British Museum, and elicited an answer explaining the facilities which that institution affords for musical reference and study.

The association deserves the support and co-operation of every one interested in the cultivation of music either theoretically or practically, and we cordially wish it the permanent success it seems in a fair way to attain.

W. POLE.

From The Saturday Review.
EBB AND FLOW.

WE have all been taught from our cradles that there is a tide in our affairs, and that it is our wisdom to take it at the flow. But we are not, in our youth at least, encouraged to look equally for the flowing of the tide in ourselves, or to take advantage of it. Doing things by fits and starts is severely discouraged by teachers. And very naturally; for it would be exceedingly inconvenient to them to have to wait for the rising tides of their pupils' inclinations, the laws of which would be

harder to calculate than those by which any of the earth's waters rise and fall. But when we have become our own governors we are soon forced to recognize the fact that our nature is subject in almost all directions to fluctuations, more or less periodical, and not by any means easily controlled by the will. What we cannot control we must study, and make allowance for.

Temperaments seem to differ very widely in the degree in which they require intervals of intermission from labor. Not to speak of the familiar varieties of constitution with regard to sleep, there is no doubt a similar variety with regard to the power of continuing any one kind of effort for months or years. We have all heard accounts, which sound almost fabulous to ordinary minds, of writers of fiction who, as one novel is ended, begin another with no more ceremony than their neighbors make of taking a fresh sheet of paper. We see constantly before our eyes the manufacture of some kinds of intellectual tissue which proceeds as uninterruptedly as if by machinery. If the product in such cases is not generally of the very highest type, the facility of unintermitting production is almost as wonderful a thing in its way as the power of occasional soaring which belongs to a different order of minds. The minds which produce great works at long intervals may, however, possess, for aught we know, as great a power of continuous labor as those which turn out mental shoddy by the yard. Only the power is more complex; and if we may hazard a guess about such matters, we should suppose that its flow even when steadiest was likely to be composed, as it were, of many currents, which so give place to each other as to afford intervals of relaxation for each. In any great work of imagination, for instance, the creative effort must be much more rapid and transient than the labor of working out details, so that the imagination may fold its wings for a long rest while the hand is carrying out its orders. A highly-organized mind is like a great ship which pursues its appointed course without pause, though the officers sleep by turns. Smaller craft may have to lie to altogether while the fishermen take their rest.

Without attempting to judge how far the highest powers are likely to be intermittent, we will be content with the safer and more practical statement that powers which are naturally intermittent will not yield their best fruit if urged to too continuous exertion. There are few more delicate points

to be observed in cultivating our own or our children's minds than the right allowance to be made for fluctuations of energy. We are right in discouraging capricious intermissions, but no sensible parent fails to provide sufficient intermissions of a regular kind. Later in life the question of how to deal with fluctuations becomes much more difficult, and not less important. Our powers fluctuate, and our feelings fluctuate, and not only in our affairs, but in our relations with each other, there are tides of which the ebb often fills us with unnecessary dismay. Much discouragement and misunderstanding might be prevented if the laws of these tides of the moral and intellectual world were better understood. A familiar instance, though some of us are loth to recognize its existence, is the fluctuating nature of most friendships. Such is the crudeness of our idea of constancy that many people fancy themselves guilty of some degree of unkindness if they find their appetite for some dear friend's society occasionally failing them. As reasonably might we blame our digestions for a similar failure of appetite recurring daily after dinner. The trouble is that in friendship the ebb-tides do not generally keep time on both shores; nor do they even occur with sufficient regularity to be announced beforehand. All that can be done by people whose disposition is markedly tidal is to recognize once for all the fact that their feelings will vary, and that such variations need not in the slightest degree depend upon any change in the source from which they spring, or even in their permanent average amount. Mere ebb and flow is a phenomenon which depends upon complicated relations with a system in which our own individual life, and therefore *a fortiori* our affection for any one person, is but a minute feature. Some people are much more open to these influences from the universe than others. It is idle to attempt to treat such susceptibility as matter for either praise or blame, though all susceptibilities doubtless call for the exercise of firm self-control, and call too often in vain.

People whose feelings are liable to wide and rapid oscillations have a troublesome task, not only in regulating them, but in giving any account of themselves. Those who are naturally given, not only to oscillation, but to introspection and self-expression, probably find much amusement in framing their reports of their experiences and laying them before the outer world. They may occasionally be troubled with twinges of misgiving as to the perfect com-

patibility of the various "sides of truth" which at different times they are called upon to exhibit. They are thus furnished with a key to many of the apparent inconsistencies of others, who, not being perhaps blessed with any great self-registering faculties, can do justice to their variations of feeling only by a series of contradictory utterances. Nothing is more comfortable in a fit of reaction against one's most cherished ties than to fall in with a friend who not only knows what it is to blow hot and cold, but has a cheerful conviction that an occasional change of partners in the dance of life brings refreshment to all concerned, and rather helps than hinders fidelity in the long run. In truth, it is for the sake of steadiness, of constancy, of perseverance in everything good, that we would encourage the giving free play to those variations of feeling which, like the tides, are really subject to laws as constant, and doubtless as beneficent, as those which produce cohesion. The mere use of these obvious metaphors reminds us that it is the same force of attraction which keeps the stone in its place and draws the waters upwards in their season. It would be the height of presumption for us to fix the degree of fluidity which is allowable or desirable in human character. But to attempt to restrain a naturally fluid and fluctuating nature within the limits proper to a more rigid one is a mistake so easily made, so common, and so disastrous that we wonder that it is not more distinctly recognized by moralists. Somebody said it was a pity the devil should have all the best tunes, and surely it is a pity that the path down-should have all the variety.

If our mental changes were, like the ebb and flow of the sea, only a perpetual alternation of different phases of almost equal beauty and interest, there would perhaps be little need to plead for their acceptance as inevitable. But our fluctuations distress and discourage us because unfortunately they are too often more like those of a tidal river, leaving bare unsightly margins on either side of the shrunken stream. Too often the stream of life and of activity seems not to change its place, but to contract its volume. We long not for a change of society, but for solitude. Our pleasure not only in one particular friend, but in friendship, seems to fail us. The objects of our endeavor and hope seem to dwindle in size or to move further off, and their hold upon us relaxes accordingly, leaving the burden of progress to press too heavily for our strength. It would be idle to pretend that there are not real, as well as

apparent, failures of the very springs of life. The dwindling of our stream may be caused, not by a mere tidal fluctuation, but by the ebbing away of the fountain itself. All that can be said is that we ought never to be hasty, and that we are continually tempted to be hasty, in concluding that this is so. A mere lessening of power or of pleasure in any pursuit ought not to discourage us until we have given ourselves abundance of time for the ebb and flow to take place. It is one of the great advantages of experience that it enables us confidently to look for the return of the tide.

It may not be the case that steady powers are always, or even generally, of a lower order than those which are comparatively intermittent; but it must, we think, almost necessarily be the case that the most intense feeling comes only in waves. Human nature could not bear the strain of feeling at once very highly wrought and quite continuous. Most of us are familiar with the unexpected intervals of insensibility which come to relieve the pressure of acute sorrow. Grief which retained its hold of the mind without any such intermissions would, if severe, partake of the nature of madness; or, at any rate, would soon produce it. And either grief or joy, if intense, tends in most minds to bring about some degree of reaction. Religious biography abundantly shows how inevitably those natures which are capable of rising to heights of rapture sink back at intervals into corresponding depths of gloom. A moderate amount of self-knowledge leads people of this temperament to tremble at any unusual elevation of spirit, knowing well that it is the prelude to days of darkness. And the days of darkness are apt to last longer than the bright visions which usher them in. Perhaps also a certain natural instinct of self-preserva-

tion warns people of very emotional temperament to be on their guard against any violent fluctuations of feeling. Some degree of variation and intermission may be natural and wholesome, but instinctively we all feel that equanimity is a great good. It is only in so far as feeling can be made to yield a steady light that we can trust it as a guide for action. If it persists in fluctuating we must learn to strike an average for practical purposes.

Perhaps no human being is quite without tidal fluctuations of some kind, however they may be hidden under a uniform crust of manner and habits. We all admire the stubborn determination which pursues its course without regard to any failure of inclination; but some admiration is also due to the skill which makes every fluctuation serve its turn. Self-command is a fine thing, and so is versatility. It is useless to ignore the forces which we cannot control. And if there is danger and inconvenience in the fluctuations of feeling which belong to certain temperaments, it is undeniable that much of the picturesqueness of human nature depends upon its ebb and flow. People so self-controlled or so evenly balanced by nature that they always appear to be at a uniform level of feeling lose as much in impressiveness as does the Mediterranean Sea for want of tides. They never rise to the pitch of eloquence either in words or action which belongs to the more impulsive type; and their even tenor leaves no room for the witchery of uncertain expectation by which some natures hold us spell-bound. As the dropping of water will wear away stones, so the rising and falling of spirits tends, up to a certain point, to deepen sympathy by repeated impressions. Beyond that point, it is true, it may wear it out.

LEAF-ABSORPTION IN PLANTS.—The earlier experimenters on this subject, M. Perault, to wit, and Hales (1731), were persuaded that leaves absorbed dew and rain. For over a century the investigations of others supported this view, until M. Duchartre, in 1857, from his experiments, advanced a contrary opinion—that now held by most vegetable physiologists, and commonly taught in our schools. But, strange to say, gardeners, in their everyday operations, adopt a different notion from that prevailing in science. The subject has recently received the attention of the Rev. G. Henslow, who, in a paper read before the Lin-

nean Society (November 7), shows that, while it may be true that, as Duchartre has said, dew is not absorbed by saturated tissues at night; yet, on the contrary, his (Henslow's) experiments go to prove that absorption *does take place* at and after sunrise, when transpiration recommences, and an indraught is caused by the moisture, wherever lingering on the leaves. He further corroborates M. Boussingault's late assertion, that, when leaves are purposely or naturally killed by excessive drought, they then do absorb water, as proved by the balance, or otherwise.